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EIGHTY-FIFTH SESSION.—1862.

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THE SECOND ANNUAL REPORT

OF THE

INSPECTORS AND SUPERINTENDENT

OF THE

NEW YORK ASYLUM FOR INSANE CONVICTS,

AT AUBURN.

October, 1861.

ALBANY :
PRINTED BY C. VAN BENTHUYSEN.
1862.

Officers of the Asylum.

BOARD OF INSPECTORS,

JOSIAH T. EVEREST, DAVID P. FORREST,
JAMES K. BATES.

RESIDENT OFFICERS,

EDWARD HALL, M. D., *Superintendent.*

CHARLES E. VAN ANDEN, M. D., *Ass't Physician.*

OFFICIATING CHAPLAIN,

REV. B. I. IVES.

State of New York.

No. 76.

IN SENATE,

February 5, 1862.

REPORT

OF THE INSPECTORS OF STATE PRISONS, TOGETHER WITH
THE REPORT OF THE SUPERINTENDENT OF THE ASYLUM
FOR INSANE CONVICTS.

To the President of the Senate :

The Inspectors of State Prisons, respectfully submit to the
Legislature their report on the condition of the Asylum for In-
sane Convicts.

Respectfully submitted,

J. T. EVEREST,
D. P. FORREST,
JAMES K. BATES,

Inspectors.

M74285

TO THE
LIBRARY OF
CONGRESS

New York Asylum for Insane Convicts.

REPORT OF THE INSPECTORS.

The Inspectors of the State Prisons respectfully submit to the Legislature the following report of the condition of the Asylum under their charge:

This institution, under the immediate care and supervision of its superintendent, Dr. Hall, has, during the past year, in the discipline and treatment of its inmates, and general management, received of us that close care and attention that an institution in its comparative infancy and importance demanded:

The success attending the treatment of the patients, considering the very unfavorable circumstances attending their cases before received, has been quite satisfactory; most of them having passed through the most favorable time for receiving benefit—their disease having assumed a chronic form—in some cases having been aggravated, as we are sorry to think, by punishment—supposing them to be sane but obstinate and refractory. And here we would say, that there has not been, as we have reason to believe, that close attention given by our prison physicians to detect insanity among the convicts in its incipient stages. This may have been for the reason that they are so inadequately compensated that they could not afford the time and attention necessary; and we hope for humanity's sake, as well as justice's and the interests of the State, that the bill increasing their salary, that passed the Senate last session, will receive your early attention.

This institution, we think, has fully met the expectations of its originators thus far. But we believe it is capable of more enlarged usefulness, without any considerable increased expenditure, by carrying out the suggestions of the superintendent in his report, in addition to its present purpose making it an institution for the reception and treatment of the criminal insane,

who now, in so large numbers, are cruelly incarcerated in our jails. And with these views we would urge, with some modifications, the early passage of the bill reported by senator Ferry last winter.

The superintendent and his assistant, as well as all the officers, have very zealously and faithfully performed their respective duties, for which they are entitled to and do receive our most hearty commendation.

Respectfully submitted,

J. T. EVEREST,
D. P. FORREST,
JAMES K. BATES.

REPORT OF THE SUPERINTENDENT.

To the Hon. Board of Inspectors of State Prisons of the State of New York :

Gentlemen—In accordance with the by-laws of this institution, it becomes my duty to present to you the annual report of its condition and progress during the year ending September 30, 1861.

There were in the asylum, on the first of October, 1861, 55 patients. There have been received during this year from

Sing Sing.....	9
Auburn.....	4
Clinton.....	1
Utica.....	16
Whole number.....	30

Making the whole number during the year, 85.

There have been discharged during the year 12, and 4 have died, leaving now in the asylum 69. Whole number received since the asylum opened, 99.

Discharged since the opening of the Asylum.....	26
Died	4
Total.....	30

Of the four who died during this year, one died of phthisis, one of heart disease and paralysis, one of disease of heart, one of general paralysis.

I am very happy to be able to say that the result in regard to the cure and improvement of the patients, has been more satisfactory this year than during any previous time since the asylum was opened. Many of our patients have long been the subjects of disease. All the circumstances of their condition are gloomy

and depressing; their education and all the surroundings and influences of their childhood and youth, have often been most deplorable, and the work of restoration to reason and manhood, must be slow and tedious. It is indeed gratifying when it is perceptible, and I therefore think that we have much cause for satisfaction and encouragement.

Since May, the asylum has been crowded, having from seven to twelve more patients than there are sleeping rooms; still, the general health of the patients has been very good with the exception of those diseases of the seasons which arise from local causes that we cannot control. The four who died were suffering from chronic disease when they entered the asylum.

The garden and grounds have furnished useful and beneficial employment for a large number of our inmates. The vegetable garden has yielded a substantial return in the abundance of good fruit and vegetables used during the summer and in store for winter. The amount of these will be shown in one of the tables.

The flower garden has been a source of great pleasure and delight; has furnished agreeable employment to many, and has been self-supported by the sale of seeds and roots, and prizes obtained at the county fair.

We have just finished an exercise yard, with shade-trees, built with secure fences fourteen feet in height, which will be highly beneficial for those unable to work, yet who need exercise in the open air, and will afford those under restraint privileges of air and exercise which we were previously unable to provide as often as desirable.

The labor of grading and preparing this yard, and of building the fence, was performed (with the exception of one day's work) by the patients and attendants.

Since April the patients have accomplished, under the direction of the attendants, a large amount of useful and necessary labor, besides their work in the gardens. They have painted (with less than ten days additional help) all the outside wood work of the premises, excepting the windows, and including the gutters; and have put on 900 feet of roofing. They have also done nearly all the carpenter and blacksmith work of the place, and have assisted in all departments of domestic labor, especially in washing, ironing and house-cleaning. We cannot expect much positive pecuniary benefit from the uncertain and fitful labors of lunatics, but we are enabled to save, in various ways of labor,

quite a large sum yearly. Their employment in useful work becomes also beneficial and curative to themselves, by furnishing physical exercise, diverting their minds from their delusions, proving to them our confidence in their ability, and encouraging them to assume a degree of judgment and responsibility which is salutary and elevating.

The importance of so extending the benefits of this institution as to reach a numerous class of criminal insane, who are annually confined in the jails of this State, becomes more apparent, as we learn from time to time the condition of some of our own patients before they were sent to prison, and find how large is the number of the insane who have committed crimes and been confined in jails during the last three years.

That we might have the most reliable information on this subject I have addressed the following questions to each sheriff in this State :

How many insane persons have been received in your jail during the last year who have committed crime ?

How many during the last three years ?

In the thirty-three counties from which I have received answers there have been 51 such persons during the last year, and 132 during the last three years.

Either this class of insane are greatly increasing or they have formerly escaped observation ; however this may be all will see that they should be restrained, cared for, and if possible cured, both for the sake of humanity and for the safety and economy of the community.

The last year's report of this asylum treats more fully of this subject, and I would refer to it those who are interested, and also to the State Lunatic Asylum at Utica, by Dr. John P. Gray, for the year 1857.

The dietary of the patients for the past year, while very plain, has been sufficiently varied and ample both for comfort and health. Bills of fare have been prepared for each day of the week, and each meal, and changed from time to time as economy and the products of the seasons have suggested. The daily cost of rations, per day, for the patients varies from $7\frac{1}{2}$ to 9 cents.

The average cost, per day, for the last year for rations for all the inmates of the asylum, including all the officers whose duty requires them to board in the institution, has been 10 7-10 cents.

The average cost of preparing and cooking such rations, in-

cluding store-keeping and cooks' wages, fuel, etc., has been 1 6-10 cent.

The clothing of the patients is now of excellent quality, and part of the cloth is made expressly for their use, but with the best attempts to economize the clothing of the insane is expensive. Some of them are destructive, and restraining apparatus will not always prevent them from tearing or injuring their clothing and bedding. But the chief cause of the unusual wear and destruction of the clothing of the insane is from their incessant motion and restlessness. No fabric, however strong, can long withstand the effect of this, especially shoes and stockings are soon worn by their shuffling pacing restless movements. The average cost of bedding and clothing, including all articles of wearing apparel for each patient this year, has been 15 or 28 9-10 cents a week. This has been more than last year, on account of the necessity of providing bedding for so large an additional number.

It will be seen that the expenses of the institution have been materially lessened this year, while the number of patients has been increased. This is, partly, on account of the more finished condition and better order of the place, and to the better system in all departments. And I take great pleasure in saying that I have been cordially supported and assisted by all in the employment of the Asylum, in my efforts to economize. It is also evident that the larger the number of patients the less is the cost in proportion to their numbers, especially when no additional officers or help are requisite.

The expenses were last year for	
General support.....	\$14,221 95
For this year.....	12,491 78

The expenses of last year were, for	
Building and repairs.....	\$3,269 63
Building and repairs this year.....	1,672 92

The estimate for the coming year, as will be seen, is somewhat less than the expenditure of the past year.

The average cost of each patient for the year past, exclusive of building and repairs, and including officers' salaries and the patients' clothing, has been about \$3.45 per week. The reported average cost of each patient in 9 general asylums in this country

inclusive of officers' salaries, but exclusive of clothing, is \$4.21 per week. The reported average cost of each patient in 10 general asylums, exclusive of officers' salaries and patient's clothing, is \$3.63.

The earnings of the Asylum from miscellaneous sources, (table No. 10), have been \$215.61.

The products of farm and garden, (table No. 9), have amounted to \$527.16. The expenses of this department have been \$63.71.

The patients have done 5,556 days labor, which, at 30 cts per day would amount to \$1,666.80.

The real estate was inventoried last year \$760.15. It was this year inventoried \$792.05.

The personal estate was inventoried last year \$9,321.41. It was this year inventoried \$10,573.24.

The wall enclosing the premises needs to be repaired ; it never was pointed and is easily scaled, requiring great watchfulness on the part of the officers to prevent escapes.

It can now be repaired at an expense comparatively small with what will be requisite a few years hence, when the whole top of the wall will have to be rebuilt. The estimate for the necessary repairs was carefully made last year, and was \$1.500. I have repeated the mention of this subject again this year, because it seems so important an economy to save the rest of the wall.

We are under obligations to many persons for favors and kindness shown to our patients, especially to Mr. E. O. Sibley of Buffalo, for a box of valuable books and magazines ; to Mrs. M. A. Chase of Philadelphia, for books and pictures ; to Grace Greenwood, for two copies of the " Little Pilgrim " throughout the year ; to Knapp & Peck of Auburn, for a liberal supply of newspapers ; to Mr. B. P. Johnson, Secretary of the State agricultural society, for a large number of the society publications ; to Mr. Samuel B. Woolworth, Secretary of the Regents for the State publications ; to Mr. L. C. Mann of Auburn, for a number of valuable books ; also, to Mr. Lucky, chaplain of Sing Sing, for books.

We are also under obligations to Wilson & Morris, minstrels of Boston, and to Dupres & Greene, minstrels of New York, for their cheering songs, which are remembered with much pleasure by our patients ; also, to Mr. Daniel C. Goodrich of Auburn, for a large quantity of sod ; and to Mr. Wm. Cutting, nursery-man of Auburn for flowers.

Having the cares and responsibilities of both superintendent and steward, I would gratefully acknowledge the relief and assistance I receive from Dr. Van Anden's kind and faithful attention to the patients, and would also take this opportunity to say that I am gratified by the patient and willing assistance of all who hold places of responsibility and trust in the asylum.

I have continued to receive much courtesy and kindness from your Board, and I am glad of this occasion to express to you my gratitude, and to say how much lighter my responsibilities are rendered by your advice and supervision.

We have been preserved during the past year from dangers, accidents and disease, and we enter upon the coming year with gratitude and hope.

In all our ways we would acknowledge Him who has thus far so kindly directed our steps, and in His Providence trust for the future welfare of this institution.

Respectfully submitted,

EDWARD HALL.

Asylum for insane convicts.

AUBURN, October 1, 1861.

CHAPLAIN'S REPORT.

AUBURN, *September 30, 1861.*

To the Honorable Board of Inspectors :

Gentlemen—In addition to discharging my duties as chaplain of the Auburn prison, I have also, (in accordance with your request), continued to hold religious service in the "State Lunatic Asylum for insane convicts," nearly every Sabbath afternoon during the past year.

These services consist in singing and prayer, reading the scriptures, and making explanatory remarks, adapted to the condition of these doubly unfortunate men.

Many of the inmates usually unite with us in singing to the praise of God, and nearly all of them appear to be much interested in the exercises.

Indeed, it is often a matter of surprise to me to witness the attention and good deportment of the men when assembled for divine worship.

The question is often asked me, ' What good does it do to preach to men who are insane ? ' and it really appears quite pertinent.

But if the persons who asked that question could be permitted to attend some of our seasons of worship, and witness the interest manifested as well as the soothing and quieting influence of our devotional exercises upon the minds of those even who are at other times quite frantic, they would no longer question the propriety and importance of preaching the gospel even to men who are insane.

I regret that our little chapel (or the room designed for a chapel), is yet unfinished. I think that our religious services would be much more impressive and beneficial if we could hold them in a convenient room which was only used for that purpose.

I am happy to say that all the officers and attendants at the

Asylum have ever appeared not only willing, but anxious, to do what they could to assist me in my efforts to ameliorate the condition of the unfortunate men under their charge, and for which they will please accept my thanks.

Respectfully, your obedient servant,

B. I. IVES.

TABLE No. 1.

Showing the form of mental disease of the patients.

Imbecility	1
Dementia	15
Partial dementia	19
Acute mania	5
Chronic mania	35
Melancholia	6
Not insane	3
Doubtful	1
	85

TABLE No. 2.

Showing the ages of the patients.

Under 20 years of age	2
Between 20 and 30 years of age	28
do 30 and 40 do	27
do 40 and 50 do	18
do 50 and 60 do	7
do 60 and 70 do	2
do 70 and 80 do	1
	85

TABLE No. 3.

Showing the nativity of the patients.

America (29 white and 15 black)	44
England	4
Ireland	22
Germany	11
Switzerland	1
Prussia	1
Italy	2
	85

TABLE No. 4.

Showing the social condition of the patients.

Married	21
Unmarried	60
Not known	4
	85

TABLE No. 5.

Showing the trade or occupation of the patients.

Barber	1
Blacksmiths	3
Boatmen	2
Book keeper	2
Butcher	1
Cabinet makers	3
Carpenters	2
Cook	1
Cooper	1
Carman	1
Dentist	1
Farmers	10
Laborers (common)	33
Mason	1
Merchant	1
Painter	1
Printer	1
Physician (homœopathic)	1

Sailors	3
Shingle maker	1
Shoemakers	6
Stone cutters	2
Tinsmith	1
Tailors	3
Waiters	3
Weaver	1
	85

TABLE No. 6.

Showing the counties where convicted.

Albany	5
Alleghany	2
Cayuga	2
Chenango	1
Chemung	1
Chataqua	1
Columbia	1
Cortland	1
Dutchess	3
Erie	4
Essex	1
Franklin	1
Fulton	1
Genesee	1
Green	2
Herkimer	1
Jefferson	1
Kings	3
Monroe	4
New York	19
Niagara	1
Orange	1
Oneida	4
Ontario	1
Onondaga	1
Queens	3
Rensselaer	1
Saratoga	1

ASYLUM FOR INSANE CONVICTS.

17

St. Lawrence	2
Schenectady	2
Suffolk	1
Tioga	1
Ulster	3
Washington	2
Westchester	6
	85

TABLE No. 7.

Showing the crimes of the patients.

Arson	6
Attempt at arson	1
Assault and battery	1
Assault to kill	3
Burglary	26
Burglary and larceny	6
Bigamy	1
Forgery	2
Larceny	17
Manslaughter	5
Murder	3
Mutiny	1
Rape	7
Rape (attempt)	2
Robbery	3
Robbery, post office	1
	85

TABLE No. 8.

Showing the number of deaths of patients.

Phthisis	1
Disease of heart and paralysis	1
Disease of heart	1
General paralysis	1
	4

TABLE No. 9.

Showing the products of the garden grounds and barn.

Asparagus, 102½ lbs. at 5½c.....	\$5 64
Beets, 12 bunches, 6c.....	72
Beets (early), 3¾ bunches, 50c.....	1 63
Beets, 3¾ bunches, 38c.....	1 14
Beets, 58 bunches, 30c.....	17 40
Beet greens, 1 bunch, 25c.....	25
Beans, (string) 8½ bushels, 75c.....	6 19
Beans, (shell) 19½ bushels, 75c.....	14 63
Beans, (white) 3 bushels, \$1.25.....	3 75
Cabbages, 1,131 heads, 4c.....	45 24
Cauliflowers, 51 heads, 10c.....	5 10
Cucumbers, 82 dozen.....	6 07
Celery, 142 dozen, 10c.....	14 20
Currants, 34 quarts, 4c.....	1 36
Carrots, 13 bushels, 25c.....	3 25
Egg-plant, 4 head, 8c.....	32
Gooseberries, 29 quarts, 6c.....	2 34
Muskmelons, 166 quarts, 6c.....	9 96
Onions, 9 pecks, 25c.....	2 35
Onions, 20¾ pecks, 50c.....	10 38
Onions, 108 bunches, 3c.....	3 24
Peas, 6 bushels, \$1.....	6 00
Peppers, 2 pecks, 50c.....	1 00
Parsnips, 10 bushels, 50c.....	5 00
Rhubarb, 155 lbs., 5c.....	7 75
Rhubarb, 135 lbs., 3c.....	4 05
Radishes, 46 bunches, 4c.....	1 84
Radishes, 3 bushels, 75c.....	2 25
Raspberries, 42 quarts, 12c.....	5 04
Turnips, 24 bunches, 6c.....	1 44
Turnips, 6 baskets, 38c.....	2 28
Turnips, 26 bushels, 25c.....	6 50
Tomatoes, 86 dozen, 17c.....	14 62
Tomatoes, 2½ bushels, \$1.....	2 50
Tomatoes, 17½ bushels, 75c.....	10 87
Squashes, 91, 4c.....	3 64
Squashes, (winter) 120, 6c.....	7 20
Squashes, (Hubbard) 6, 10c.....	60

ASYLUM FOR INSANE CONVICTS.

19

Spinach	\$2 25
Salsify, 6 bushels, 75c.....	4 50
Strawberries, 450 quarts, 13c.....	58 50
Watermelons, 41, 9c.....	3 69
Hay, 2 tons, \$9.....	18 00
Manure, 132 loads, 50c.....	66 00
Pork, (butchered) 800 lbs., 6½c.....	52 00
Pork, (live), 1,458 lbs. 6c.....	87 48
	\$529 56

TABLE No. 10.

Showing the miscellaneous earnings.

Miscellaneous earnings.....	\$215 51
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TABLE No. 11.

Showing the amount of labor performed by patients.

No. days labor performed, 5,556, 30 cents	\$1,666 80
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TABLE No. 12.

Showing the moneys expended for the general support of the asylum during the year ending September 30th, 1861.

		Wanted for 1862
Salaries of officers and pay of help ..	\$5,085 80	\$4,850 00
Chaplain	100 00	100 00
Rations	3,442 62	3,440 00
Printing and stationery	184 57	170 00
Furniture.....	255 33	250 00
Medicine.....	44 50	50 00
Clothing and bedding.....	1,048 27	900 00
Fuel and light	1,272 61	1,300 00
Hay, grain, etc.	63 71	90 00
Miscellaneous	994 50	800 00
	\$12,491 93	\$11,950 00
Building and repairs.....	1,681 92	800 00
	\$14,173 85	\$12,750 00

State of New York.

No. 77.

IN SENATE,

March 13, 1862.

ANNUAL REPORT

OF THE GOVERNORS OF THE NEW YORK HOSPITAL.

To the Legislature of the State of New York :

The Governors of the New York Hospital respectfully present their annual report of the state of the establishment under their charge.

GEORGE T. TRIMBLE,

President.

NEW YORK, *March*, 1862.

D. COLDEN MURRAY, *Secretary.*

REPORT.

The Governors of the New York Hospital continue to hold and manage, under the same corporate capacity, two distinct and large establishments. One of them is the hospital, situate on Broadway, in the lower part of the city, for the reception of medical and surgical patients. The other is the asylum for the care and cure of insane patients, with extensive grounds, situate in the still open country, within the legal bounds of the city and county of New York, and in the vicinity of the Central Park.

Both of these institutions have continued during the past year to discharge efficiently and usefully the objects of their foundation. As has been stated in former annual reports of this corporation, both establishments have been much enlarged and greatly improved since 1852. The asylum has been further enlarged during the past year.

The means to effect these valuable improvements have been obtained partly from loans and in part from the donations and legacies of individuals during the last few years; the former annual grant from the State, together with the receipts from pay-patients, having been applied to the current expenditures and support of the hospital and asylum. The Governors have to regret that these private donations, liberal as were the amounts in reference to the individual donors, were not sufficient to meet the expenditures for building, without the necessity of a large debt on mortgage.

The amount contributed for these improvements, from private sources, and applied to them from 1852 to 1861 was \$160,450.

The sum of \$30,000, obtained on mortgage, was applied during the year 1861 to the improvement of the asylum.

The financial condition of this corporation, on 31st December,

1861, stands thus, as compared with that on 31st December, 1860 :—

On the 31st December, 1860, it stood thus :—

Debt on mortgage.....	\$70,000 00
Balance due Bank of Commerce	23,484 45
	\$93,484 45

Deduct balance to credit of—

Bloomingtondale Asylum, in Bank of America, \$18 92	
do do hands of warden, 3 68	
	22 60
	\$93,461 85

On 31st December, 1861, it stood thus :—

Debt on mortgage.....	\$100,000 00
Balance due Bank of Commerce	41,011 13
	\$141,011 13
Deduct balance in Bank of America to credit of	
Bloomingtondale Asylum	535 27
	\$140,475 86

All bills and demands for current expenses of the hospital and the asylum, were, in both years, as usual, settled in full to the close of the year.

Under the present arrangement with the Secretary of the Treasury of the United States, in relation to the payments for seamen from hospital money, and by other prudential regulations, the Governors have obtained some increase of income during the past three years, but not greater than was required by the rate of prices, and the increase in cost of all the items of hospital expenditure.

In the month of April, 1861, an arrangement was also entered into with the military authorities of this State for the reception of volunteer officers and privates who might be sent by the proper authorities either from camp or the field. One of the large hospitals was set apart to this purpose, and occasionally other buildings were used. During the last seven months of the year numbers of the New York volunteers, in the service of the United States, were thus received. A similar arrangement was made as to troops of some other States, who might need hospital relief,

either in passing through this city, or on discharge and return. The whole number of pay-patients, and the amount of compensation was thus nearly doubled, and though the rate charged did not afford a compensation for the buildings, furniture, &c., in addition to the actual outlay for support, yet the sum thus earned enabled the Governors to keep up the establishment during the year of limited resources and much pecuniary anxiety.

Some portion of the debt of the year will be refunded from the allowances for damages awarded this corporation for the taking of real estate for the widening of Worth street.

For relief from the principal of their debt on mortgage, the Governors look with hope to that individual liberality which they have heretofore experienced.

Their sole productive property consists of three mortgages, yielding an income of \$621.61. The only other property consists of the ground and buildings between Broadway and Church street, occupied only for hospital purposes, and of the lands and buildings at Bloomingdale, occupied entirely as an asylum for the insane, with the furniture, buildings, libraries, instruments, &c., for the various hospital and asylum purposes. This property (though of great value) being applied to no other use, yields no income. It is, however, hoped that the return of peace and commercial activity will enable this corporation to derive such pecuniary benefit from its real estate as to retrieve it from the difficulties which now embarrass it, and threaten to limit and impair its future usefulness.

The following abstract statement shows the receipt and expenditures, from all sources, and on all accounts, under their respective heads, during the year 1861 :

Balance in Bank of America to the credit of the asylum, Dec. 31, 1860	\$18 92
Balance in the hands of the warden of the asylum, Dec. 31, 1860	3 68
Received on account of N. Y. Hospital	45,006 40
Bloomingdale asylum	51,130 47
Bank for Savings on bond and mortgage ..	30,000 00
interest on Ivers (bequest)	621 60
Balance due the Bank of Commerce by N. Y. Hos- pital, Dec. 31, 1861	41,011 13
	<u>\$167,792 20</u>

NEW YORK HOSPITAL.

Balance due the Bank of Commerce, Dec. 1, 1860..	\$23,484 45
Paid on account of support of N. Y. Hospital ----	68,468 72
Bloomingdale asylum	44,617 80
new east building for Blooming-	
dale asylum.....	21,918 14
Paid interest on loan, Bank of Savings.....	5,340 00
to Bank of Commerce.....	1,097 94
insurance on N. Y. Hospital.....	599 60
for Bloomingdale asylum.....	1,695 10
lawyers' fees examining title.....	35 18
Balance in Bank of America to the credit of Bloom-	
ingdale asylum, Dec. 31, 1861.....	535 27
	\$167,792 20

THE HOSPITALS IN THE CITY OF NEW YORK.

The Hospital buildings in the city consist of three separate large stone edifices, which are capable of being made able to accommodate about five hundred patients; together with four smaller low stone buildings for the washing and heating apparatus, the pathological cabinet and lectures, and other purposes. These, and also the grounds and situation of the buildings, have been fully described in the volume of the history and by-laws of the New York Hospital, prepared and printed by this Board, in 1856, as also in their several annual reports for the years in which these buildings were erected or remodeled.

These are all in complete order and repair. The large building, denominated the north hospital, erected in the year 1841, is, in some respects, not equal to the others; but it is a spacious, solid and commodious building, with a variety of apartments convenient for the use of an extensive sanitary establishment. The other two larger buildings, as well as the smaller out-buildings, are, for their several purposes, it is believed, as perfect as could be erected for city hospitals.

The position of the Hospital renders it a convenient and accessible point of resort for relief for surgical cases, as well for strangers as residents. Many of these are sufferers from sudden accidents, from fires, wounds, falls, injuries on board river or ocean vessels in port, or on railroads. It is probable, therefore, that hereafter the surgical cases at this Hospital will continue to increase both in number and in their proportion to those from mere disease.

By an arrangement with the Commissioners of Emigration, emigrants chargeable to them, when requiring aid at night, or under circumstances when they cannot be taken to the distant Hospitals of that Board, are received temporarily and paid for by the Commissioners,

Sick seamen, who have paid hospital money, have been received and taken care of under an arrangement with the Secre-

tary of the Treasury of the United States, at the rate of \$4 per week, paid from the United States Hospital Fund.

Patients able to contribute towards their own support are received at an agreed rate. This is now ordinarily \$4 per week, including medical and surgical care. This charge has been fixed as appearing from accurate calculation to be less than the present actual average cost of each patient, exclusive of any charge for medical or surgical aid, or any estimate for the rent or cost of buildings or grounds. A few patients demanding and requiring special and more expensive accommodations and attendance than the average, and able to pay for the same, are charged at such rates as may be considered proper under the special circumstances. Other patients, who appear unable to pay at all, are received gratuitously, and these usually constitute from one-third to nearly one-half the number of patients. By a resolution of the Board of Governors, in 1859, the charge for female patients was reduced to \$3 per week in consequence of the limited means at the disposal of this class of patients. The Governors then confidently expected that the loss to their funds from this reduction would be met by the liberality of the State and of private donors who feel an interest in the welfare of deserving women whom sickness and poverty may compel to seek the relief of the Hospital. The failure of the State to respond to this expectation, has been the source of general regret, and much embarrassment to this corporation.

During the last year the number of weeks occupied in the hospital by diseased seamen was $43\frac{92}{100}$ per cent. in proportion to the other classes, against $32\frac{65}{100}$ per cent. in the year 1860. The number of weeks occupied by patients received gratuitously in 1861 was $24\frac{45}{100}$ per cent. of the whole time occupied by the several classes of patients, being a decrease on the average of the last few years. The proportion of time thus occupied by other pay patients has risen to $31\frac{62}{100}$ per cent. of the time.

There was not, in 1861, any prevailing form of severe disease, epidemic or otherwise, in any of the wards of the hospital. In all cases of contagious diseases, received or manifesting themselves in the hospital, immediate precautions are taken to remove or insulate the patient; and there has been no instance during the year. of any such disease being communicated.

The whole number of persons who received the benefits of the

New York Hospital, as medical or surgical patients, during the year 1861, was 3,624.

The number of patients in the several buildings of the Hospital in the city, on the 31st day of December, 1860, was two hundred and eighty-one; and there were admitted during the year 1861, two thousand three hundred and forty-three.

Of this number there have been cured	2,483
Relieved	474
Discharged as improper objects	52
Eloped or discharged as disorderly	45
Died	309
	3,363
Remaining 31st December, 1861.....	261
Total treated	3,624

Among the deaths are included 164 cases of sudden deaths from accidents occurring on ships, railroads, buildings, in affrays, or otherwise, upon which coroner's inquests were held. Cases of persons thus brought in, are received without reference to the probability of cure. Whatever aid the circumstances demand, is administered; otherwise, no patients are received whose cases do not appear to admit of cure or at least relief.

Deducting these 164 cases of death from casualty, the number of other deaths was 145.

Thus the practice of the house presents the following results: Of the whole number under actual treatment during the year, a little more than 4 per cent. *died*; or, taking the ratio of mortality on all discharged, as is done in some similar statistics, little less than $4\frac{81}{100}$ per cent. died. The amount of cures out of the number discharged, including deaths, shows a proportion of $73\frac{83}{100}$ per cent. discharged *cured*, exclusive of about $14\frac{09}{100}$ per cent. more discharged as *relieved* for the time.

The proportion of the cures and deaths in this Hospital for several years past, has presented very favorable results when it is considered that many of the slighter classes of injuries and diseases (which were received in the earlier years of the Institution) are now provided for by dispensary practice.

The ratio of mortality in 1861, is still more favorable than those of 1858, 1859, and 1860, in which years the Governors felt

themselves fully authorized to say in their reports, that whilst the returns are honorable to the physicians and surgeons, they show, also, by their favorable comparison with similar statistics, under nearly the same medical and surgical administration, the great advantages accruing from improved hospital construction, where pure air, regulated temperature, and all the appliances for comfort and cleanliness furnished by ample supplies of water, are the constant and efficient adjuncts to professional skill.

Of the cases under hospital treatment in 1861, 2,029 were surgical, and 1,595 medical—being about 56 per cent. of the former, and 44 per cent. of the latter.

Of the 2,029 surgical cases of the last year, 957 were from fractures, serious contusions, burns, and other injuries arising from sudden casualties, and were brought into the Hospital either by friends or the police.

The following analysis of the number and time of continuance of the several classes of patients, whether seamen paid for wholly or in part from hospital money, pay-patients, or patients gratuitously supported, exhibits the operation of the Hospital in relation to these several classes, and also to other matters of interest :

RECAPITULATION.

There were in the house on the 1st January, 1861,	281 patients.
“ received during the year	3,343 “
Total treated	3,624
Discharged, including deaths	3,363 “
Remaining December 31st, 1861	261
Of those under treatment January 1st, 1861—	
Seamen	124
Pay-patients	58
Paupers	99
Total	281
Of those admitted during the year—	
Seamen	909
Pay-patients	1,563
Paupers	871
Total	3,343
Making the whole number treated, as above...	3,624

Of the pay patients, 236 became paupers, and remained such during their continuance in the hospital.

Of those remaining December 31st, 1861—

Seamen	94
Pay-patients	84
Paupers	82
Total	<u>261</u>

The foregoing statement shows the following results, viz. :

1033 seamen have been under treatment, equal to	6,963 $\frac{3}{4}$ weeks.
1621 pay patients " " " "	5,003 $\frac{2}{7}$ "
1206 paupers " " " "	3,880 $\frac{3}{7}$ "

3860

236 transferred from pay to pauper list.

3624 patients treated in the aggregate 15,847 $\frac{3}{4}$

The time thus stated has been occupied by the several classes of patients thus :

Seamen	43 $\frac{92}{100}$ per cent.
Pay-patients	31 $\frac{62}{100}$ "
Paupers	24 $\frac{48}{100}$ "

Average proportion out of the discharges (including deaths from casualties).

Cured, per cent	73	83-100
Relieved	14	9-100
Disorderly, or eloped	1	55-100
Improper objects	1	34-100
Of deaths, including deaths from accidents	9	19-100

The average daily number in the house has been 290 22-100.

Deducting sudden deaths (falling under the charge of the coroner), 4 31-100 per cent. is the ratio of the other deaths.

The total number of inquests held at the hospital by

the coroner during the year, was 164

From the following causes, viz. :

Railroad accidents,	14
Falling from buildings, and other injuries	82
Burns and scalds,	22
Run over by stages and wagons	8

Suicides	2
Stabs, gun-shot wounds, &c.,	24
Various other causes	12
Total	164

The New York Hospital continues, as it has done for more than seventy years, to assist the great objects of medical science and instruction, by giving facilities for attendance on its practice to the students of the several medical schools in this city, and also to graduated physicians from other parts of the State, many of whom avail themselves of the improvement in practice afforded by observation of the variety and severity of disease in a large hospital,

The library, confined to medical learning and chemistry, natural history, and other sciences immediately connected with or bearing upon the healing art, is open to the same class of medical inquirers. It is managed by a joint committee from the Governors and the Physicians and Surgeons of the Institution. It is now rich in its special department, and contains above 6,000 volumes, to which new medical and scientific publications of reputation are added, as far as the means devoted to this object will allow.

The Governors recommend this library to the public, both as a proper object for the liberality of the wealthy, and as an excellent depository for the preservation of all reports, statistics, pamphlets, &c., on medical subjects or relating to the public health.

Some valuable books have been received in donation during the year, in addition to those purchased.

About twenty years ago, the formation of a pathological cabinet was begun. It was formed from the remarkable cases of morbid anatomy which occurred in the practice of the hospital, and it has increased regularly and rapidly in extent, variety and value, for the purposes of science and professional instruction. It is under the immediate care of a curator, and the several physicians who have successively filled that place have each of them left memorials of skill and fidelity. The late ROBERT RAY, Jr., M. D., while curator, prepared a very elaborate catalogue, in which the various specimens are carefully arranged and classified, and a complete account of each particular case is given.

It has lately been published, and presented to the Hospital, by his father, Mr. ROBERT RAY, and forms a valuable contribution to medical science. The Cabinet has also received additions from other sources than the hospital practice; and being now well arranged in a spacious and commodious out-building, it is consulted with great advantage.

THE BLOOMINGDALE ASYLUM FOR THE INSANE.

The number of insane patients in the Asylum on the 31st day of December, 1860, was one hundred and fifty-five, and there have been admitted during the year one hundred and eleven—making a total of two hundred and sixty-six patients during the past year.

Of the number under treatment, 131 were males, and 135 females.

Of the cases discharged during the year there were—

Recovered	42
Improved	36
Unimproved	18
Died	19
Remaining 31st December, 1861.....	151
	266

This institution, when first opened in 1821, was a pioneer establishment in this country for that improved system of medical and moral treatment of insanity which has since become general in Europe and the United States.

When it was erected, this corporation had no sufficient means to meet the outlay necessary for procuring a site, and erecting and fitting up a proper establishment out of the reach of the noise and tumult of a town, yet within a short distance from the city. On a memorial from the Governors, the Legislature granted an annuity of \$10,000 per annum for a term of years. The lands were purchased and the buildings erected by means of a debt contracted for this object, on mortgage, whilst the annuity of \$10,000 was pledged and applied to the payment of interest and reduction of principal.

The surplus income of the New York Hospital, which accrued

whilst the expenses of the Hospital and the number obtaining its aid gratuitously were small, compared with those of later years, was also regularly applied to the same object, until the payment of the mortgage in 1845, when the asylum was found to be still largely debtor to the separate Hospital fund.

The asylum had never the means of receiving many patients quite gratuitously. It did, however, receive, at a low rate, insane poor paid for by towns and counties, for many years, until the erection of the Blackwell's Island Asylum, by the corporation of New York, and of the Utica State Asylum, provided directly for most of such patients. But the great value of this establishment consists, and has for years consisted, in bringing its benefits within the reach of persons of moderate circumstances; so that the charge for support and treatment has been reduced to a rate below that which private enterprise could afford, and merely sufficient to defray the expenses of personal support. Thus it has brought the means of probable cure or relief, and always of comfortable retreat, within the reach of persons of limited circumstances, who can here support a child or parent afflicted with mental disease, under the best medical care, and with the external aids that wealth only could command, at a less cost than that of the support and care of such patients at home. The value of such an establishment near a great city, and within the reach and observation of the friends of the insane, is evident; and the facility with which this city can be reached from all parts of the State and Union, gives it similar advantages for many patients at a distance.

A large proportion of the recoveries, as usual, was from patients who had been brought under treatment not long after the first manifestation of the malady, whilst most of those who were discharged *not improved*, or who still remain in the asylum, were cases which had been neglected in their early stages.

The health of the patients, independently of their peculiar malady, has been generally good, and they have been free from any epidemic or local disease.

The asylum continues to be administered upon that system of classification and separation, and of moral and medical treatment, of which it gave one of the earliest examples on this side of the Atlantic. This system, now general in all similar institutions of the higher order, has here received, and continues to receive, all those improvements which the many skillful and humane persons

at the head of similar establishments in this country and in Europe are constantly presenting or suggesting for the relief of mental disease.

The statistics for the year show the proportion of cases cured and relieved. But such statistics do not, like those of hospitals for bodily maladies, present, by their rate of cures to cases a perfectly accurate view of the efficiency of the administration, even when taking into the estimate, as must also, be done in hospitals, the peculiar forms and comparative severity of disease.

In any asylum, the *cures* can seldom be pronounced upon with decided certainty, whilst discharges and removals often occur from causes wholly unconnected with the personal condition of the patient—such as want of pecuniary means, desire for change, hope of benefit from restoration to the patient's home, the temporary subsidence of a periodical excitement of disease, or inability on the part of friends to resist the earnest solicitations of the patient. These estimates and statistics are, therefore, given as in former years, as a useful and probable approximation, showing the general results of practice, and making an annual contribution of value to the statistics of mental disease.

The following table shows the relative state of the asylum, and the result of its practice for the last eleven years :

YEAR.	Admitted.	Whole number during the year.	Whole number discharged and died.	Recovered.	Improved.	Not Improved.	Died.	Remaining at end of year.	Average number.
1849.....	95	214	111	44	33	13	21	103	112
1850.....	97	200	90	40	15	7	18	110	110
1851.....	95	205	83	43	20	9	11	122	114
1852.....	104	226	107	47	25	15	18	119	117
1853.....	135	254	130	49	27	32	22	124	133
1854.....	122	246	119	48	29	16	26	127	126
1855.....	107	234	107	52	13	23	19	127	127
1856.....	134	261	117	54	27	17	19	144	140
1857.....	128	272	126	49	37	25	15	146	141
1858.....	112	258	113	34	34	34	11	145	146
1859.....	138	283	131	55	32	26	18	152	152
1860.....	150	302	147	50	46	22	29	155	159
1861.....	111	266	115	42	36	18	19	151	154

The additional buildings have made the in-door accommodations such as to justify the expectations of this Board and their medical officer.

Quiet and sensitive patients have been relieved of the annoying presence of the disorderly and noisy; and thus the latter have been permitted a degree of liberty formerly incompatible with the comfort of their associates.

The increase of female patients during the past few years, however, seemed to require such extension of their apartment as would give more room for classification than had hitherto been at the command of the physician. To accomplish this end, the erection of a new building was commenced in June, 1860, which is now nearly completed, and will be ready for occupation before the month of May next. This building is 110 feet long, 42 feet wide, and is three stories and basement in height. It will accommodate about forty patients, and is to be appropriated exclusively to females. Each story contains a central corridor ten feet high, lighted at each end by a window reaching from floor to ceiling, and by a large bay window in a central alcove twelve feet wide. On one side of this corridor are a dining-room, bath-room, and rooms for sick patients, communicating with attendants' rooms. Opposite are eight single dormitories of unusual size, being twelve by fourteen feet area.

Attached to this wing are a diversion-room and lecture-room, in which the various entertainments of the household will be given with better advantage and success than in the apartment now assigned to this purpose. It also contains such arrangements as will make the Chapel services more impressive and orderly.

This structure connects the original Asylum building with another erected some years later, and forms a complete united wing, permitting separation of the female patients into thirteen distinct classes, each occupying an independent suite of apartments, thus providing unusual facilities for a primary necessity in the treatment of insanity.

The large central stone edifice originally erected in 1820, and for some years the only Asylum building, being now freed from the inconveniences of containing very discordant classes of patients, presents peculiar advantages to quiet or convalescent patients, for whose use it is now applied. The introduction of

gas throughout the establishment, has added to its comfort and cheerfulness.

The grounds about the Asylum contain about forty acres, on which exercise, occupation and amusement can be enjoyed by the patients; but every facility is afforded to those who can be allowed such liberty, of a wider range in the neighborhood, under proper supervision. During the past year the Eleventh avenue, many years since laid out through the Asylum grounds, has been actually opened, and is now in use as a public highway.

The immediate neighborhood of the new Central Park, the northern boundary of which approaches nearly to the Asylum grounds, begins to afford additional means of exercise and amusement, under proper supervision, to many convalescent patients.

Dr. D. Tilden Brown continues to discharge the duties of the Physician of the Asylum to the entire satisfaction of the Asylum Committee and the Board.

The frequent though short absence of the chief physician, from necessary causes, such as the business of the institution itself, or his attendance in court as a witness in cases involving questions of mental competency, indicate the advantage of having an assistant physician resident in the Asylum, so as never to leave the establishment without the means of medical aid in any unexpected emergency.

In 1856, this intention was carried into effect. Dr. Charles Corey, Jr., was appointed assistant physician to the Asylum, and still continues to discharge his duties to the satisfaction of the Board.

Having thus submitted the state of these two important establishments, and their operations during the last year, the Governors respectfully request the renewal of the annual bounty which they have received from the State for very many years; and, if the fiscal means of the State Treasury will admit it, they hope for a moderate augmentation.

They ask the continuance of such grant, because, with its aid in meeting their necessary annual expenses, they can appeal with greater certainty of success to private liberality for the means of relief from the pressure of their present debt; and this in time they hope to obtain from private bounty, if supported by the State in their present extent of usefulness.

They also ask such aid, because, without it they would be compelled to contract the utility of these institutions to a much

narrower sphere than at present, and to exclude many who, suffering from some of the severest bodily calamities, are now received willingly, and relieved efficiently, and without charge. It should always be remembered that the means at the disposal of the Governors are only sufficient to fill the Hospital to a little more than half of its capacity. If, by private or public liberality an increase of income could be had, the usefulness of the institution would be greatly enlarged. There are hundreds of patients now relying upon dispensary aid, who could be much more effectually relieved if the doors of the Hospital could be opened to them; and it is a source of constant regret to the Board of Governors that their restricted means compel them to deny these valuable privileges to any who ought to enjoy them.

As has been stated in the former part of this report, the only productive property of this corporation are three mortgages, yielding an income of \$621.60. The great value of the ground between Broadway and Church street, and the land at Bloomingdale, has produced in some quarters the impression that this corporation is not entitled to receive any assistance from the State or the public, for the reason that if the ordinary sources of income are not sufficient to supply means for the payment of the current expenses of the institutions under the charge of the Governors, a sale of a part or the whole of the land belonging to the corporation, would produce a fund that would enable the Board to purchase other lands for hospital purposes, provide superior accommodation for the victims of accident and severe disease, and extend gratuitous treatment to an increased number of patients.

Whatever might be the force of such arguments under other circumstances, for the present, however, the unhappy state of public affairs, and the consequent much diminished value of real estate in the commercial quarters of the city, make them for the time inapplicable. To render the Broadway real estate productive, we must wait for more prosperous, though, it is hoped, not very distant days.

In the meanwhile, it is confidently trusted that this noble and beneficent institution, founded by the far-seeing wisdom of our ancestors, and sustained for near a century by the liberality of successive generations of our citizens, will not be suffered to close its doors from necessity, or even to circumscribe to a nar-

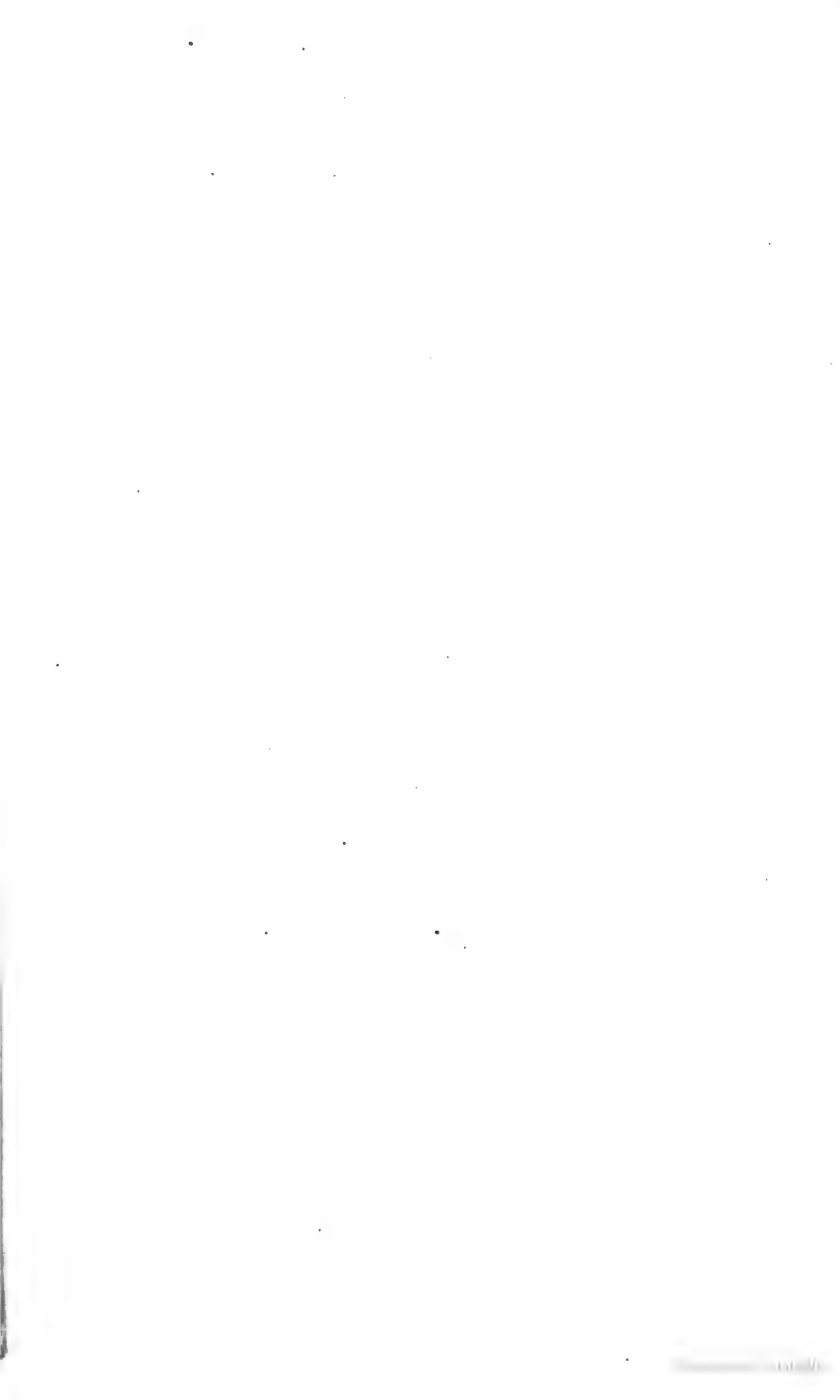
row sphere its charities, at a time when the claims of the destitute and diseased are most urgent.

It is a remarkable fact that this institution has not been more often generously remembered in the wills of our benevolent citizens, and as the omission can only result from a false impression as to the resources of the corporation, the Governors take this occasion to state that the institution greatly needs an increased income to meet the pressing demands of the sick and suffering for its privileges, and that no more benevolent application of money can be found than the increase of the present income of this corporation.

NEW YORK, *March*, 1862.

GEO. T. TRIMBLE, *President*.

D. COLDEN MURRAY, *Secretary*.



State of New York.

No. 78.

IN SENATE,

March 25, 1862.

COMMUNICATION

FROM A. N. GUNN, HEALTH OFFICER OF THE PORT OF NEW YORK, IN REPLY TO THE RESOLUTION OF THE SENATE, AS TO HIS FEES, COMPENSATION AND EXPENSES.

QUARANTINE, STATEN ISLAND, }
HEALTH OFFICE, *March 24, 1862.* }

JAS. TERWILLIGER, Esq.,

Clerk of the Senate:

SIR—In accordance with the resolution of the Senate, passed on the 13th inst., I beg leave to transmit the following report of the receipts, expenditures and perquisites of my office during the year 1861:

RECEIPTS.

From foreign vessels.....	\$31,898 99
From coasting vessels.....	1,619 50
	\$33,518 49

EXPENDITURES.

For salary of deputy health officer.....	\$2,900 00
For salary of boatmen.....	2,880 00
For house rent.....	1,425 00
For expenses of living.....	5,539 33
For legal advice.....	225 00
For repairs of boat.....	61 00
de do.....	28 82

[Senate, No. 78.]

For oars	\$9 37
For printing notices to pilots, &c.....	37 75
For inter't of boatman	34 50
For blacksmith's bill, repairs of boat house	33 75
For carpenter's bill, do do	32 03
For relief of families of volunteers	100 00
For flag	20 00
For expenditures incidental to the office	4,793 53
	\$18,119 55

PERQUISITES.

There have been no perquisites, except occasional small donations of fruit, segars, &c., from the captains of vessels, and one small contribution from a gentleman to whom a portion of the lightening was assigned, which was appropriated to the payment of the expenses incident to the office.

Very respectfully, yours, &c.,

ALEX'R N. GUNN, M. D.,
Health Officer.

CITY AND COUNTY OF NEW YORK, ss.

Alexander N. Gunn, of said city, being duly sworn, says that the items hereinbefore set forth are true and correct, and that there are no offsets against the same.

ALEX'R N. GUNN,
Health Officer.

Sworn this 24th day of March, }
1862, before me, }

JOHN A. HILLERY,
Notary Public for the city and county of New York.

State of New York.

No. 79.

IN SENATE,

March 28, 1862.

REPORT

OF ROBERT D. HOLMES, ONE OF THE COMMISSIONERS OF EXCISE OF THE COUNTY OF NEW YORK, IN REPLY TO THE RESOLUTION OF THE SENATE, CALLING FOR CERTAIN INFORMATION IN RELATION TO LICENSES GRANTED IN SAID CITY.

To the Honorable the Senate of the State of New York:

The undersigned, one of the commissioners of excise of the county of New York, in response to a resolution of your Honorable body, bearing date the 7th day of March instant,

RESPECTFULLY REPORTS :

That the number of licenses granted by the Board of Commissioners of Excise during the last year was 994; that many of such have not been called for by the petitioners; that the number taken up and paid for by the licensees is 747, and the total amount which has been received for such is \$22,410, all of which has been paid into the county treasury, as directed by the statute.

That no suits have been commenced during the year last past for violations of the excise law; that about 3,700 suits are now pending, which were commenced late in 1859 and early in 1860. These the Court of Common Pleas, in which they were brought, has declined to try on various grounds.

That no money whatever has been paid to or received by the counsel for the board for services, nor has there been paid to or received by the undersigned, as a member of the said board, any sum whatever for services or in the settlement or withdrawal of

suits against deponents thereto, nor have his colleagues, to his knowledge, received any such.

All of which is respectfully submitted by

ROB'T D. HOLMES.

Dated NEW YORK, *March* 26, 1862.

CITY AND COUNTY OF NEW YORK, ss.

Robert D. Holmes, of said city, being duly sworn, deposeth and saith that the above report, subscribed by him, is true, to the best knowledge and belief of this deponent; and further saith not.

ROB'T D. HOLMES.

Sworn and subscribed before {
me, March 26, 1862.

A. P. MANGE,

Commissioner of Deeds.

State of New York.

No. 80.

IN SENATE,

March 20, 1862.

REPORT

OF THE SUPERINTENDENT OF THE BANKING DEPARTMENT
RELATIVE TO SAVINGS BANKS.

STATE OF NEW YORK:

BANK DEPARTMENT,
ALBANY, *February 20, 1862.* }

To the President of the Senate:

Sir—I have the honor to transmit herewith the annual report of the condition of the Savings Banks of the State, in accordance with the provisions of section 2, chapter 136 of the Laws of 1857.

Respectfully,

H. H. VAN DYCK,
Superintendent.

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REPORT.

STATE OF NEW YORK:

BANK DEPARTMENT,
ALBANY, *Feb. 20, 1862.* }

The Superintendent of the Bank Department transmits herewith abstracts from the annual reports of the savings banks of this State, showing the condition of those institutions on the first of January, 1862.

The benefits resulting from banks of this character have never been more forcibly illustrated than during the past year. The general stagnation of business consequent upon a state of war, deprived thousands of employment, and rendered them dependent for present support upon the savings accumulated during more prosperous periods. Happy were those whose frugality had enabled them thus to meet the demands of an extraordinary necessity. The extent to which savings banks were instrumental in ameliorating the condition of the industrial classes, will be seen in the fact that there was withdrawn from these institutions during the calendar year 1861, the sum of thirty-three millions, six hundred and seventy-eight thousand and seventy-three dollars; whilst the amount deposited was seven millions, four hundred and ninety-four thousand, four hundred and sixteen dollars less than during the previous year. No doubt a considerable portion of the sums thus withdrawn and withheld were invested in government securities affording a higher rate of interest than is paid by savings banks; but this fact serves further to illustrate the benefits flowing from a system which husband the limited resources of the sons and daughters of toil.

Comparatively few persons appreciate the magnitude of the trust delegated to the savings institutions of this State. There are seventy-four banks for savings now in operation, having in their possession for safe keeping the enormous sum of sixty-four millions, eighty-three thousand, one hundred and nineteen dol-

lars, belonging to three hundred thousand, five hundred and eleven depositors; and averaging two hundred and thirteen dollars and twenty-one cents to each individual. When it is borne in mind that the aggregate capital of all the incorporated banks, banking associations, and individual bankers in this State, rises only to one hundred and nine millions, four hundred and three thousand dollars, it will be seen by comparison how vast is the stake which is held in trust for the humble depositors in savings banks.

It is a subject for congratulation that thus far the management of these institutions has been in the main judicious, and that though the securities have in many cases depreciated in their current market value, no bank has failed to respond to the demands of its depositors. Yet it is not to be disguised that the confidence which has been so generously reposed in banks of this character has induced a desire for their multiplication; and not unfrequently, it is to be feared, with more anxiety for the possession of the deposits than with an eye to the profit of the depositors. Practices are likewise springing up, which, there is ground to fear, will ultimately prove injurious to the confidence upon which institutions of this character are so largely based, if they do not eventuate in positive loss to the community. One of these practices, to which I would draw the attention of the Legislature, is that of depositing large sums in banks of discount and circulation, without any other security than that afforded to ordinary depositors in these institutions. The primary idea connected with a savings bank is, that the depositors will have some security other than that which pertains to an ordinary deposit, subject to the vicissitudes of trade, commerce and speculation. Every charter embodies a distinct recognition of the purpose to invest the savings deposited, in some tangible form, such as State and Government stocks, bonds and mortgages, or some other recognised security. But this wholesome principle is being widely departed from, and an examination of the returns herewith submitted will show not a few instances in which the entire sum entrusted to a savings bank will be found deposited in some bank of issue, without a single dollar of mortgage or stock security by way of investment. Some portion of cash is necessary to meet ordinary demands; but it cannot be urged as a necessity that the whole sum entrusted to a savings bank should be left to the contingencies to which I have adverted. The sum retained for

immediate demands, should bear some proportion to the amount of savings deposited, and not embrace the whole sum; since in the latter case it might be quite as well to allow the depositors to select some bank of issue for themselves, and thus relieve the twelve or fifteen respectable gentlemen annually selected to watch over the interests of savings institutions, from such responsibility. In some cases the fault lies with the Legislature, in having authorized the retention of a sum for present use, greater than the whole amount of deposits in the savings banks.

Another reprehensible proceeding is that of advertising a high rate of interest in advance, as an inducement to depositors. It must be obvious, on a moment's reflection, that the sum of the earnings, for a given period, cannot be estimated with certainty. The expenses of management, the depreciation of securities, the abundance of capital, must necessarily have a direct influence on the profits to be realized. Yet institutions which are just commencing business, and whose means and opportunities are the most restricted, not unfrequently promise, in advance, a high rate of interest on deposits, and thus seek to divert business from institutions of established reputation to those of more doubtful character. It cannot be too thoroughly inculcated that *security of principal* is the first element to be considered in regard to the deposits in savings banks; and that *profit* is but a secondary consideration. Hence, there should be mutuality of action between banks of this character, rather than a spirit of rivalry; and their ambition should be to afford the greatest practicable safety to their depositors, rather than the attainment of large dividends through hazardous investments. Nor can the Legislature be too careful in granting additional charters for banks of savings. Almost every section of the State is already abundantly supplied in this respect. More than half a dozen of the banks to whom charters were granted at the last and previous session of the Legislature, are still unorganized. Their undue multiplication may prove a source of unmitigated evil, not only to existing institutions, but a loss to a portion of the community least able to protect themselves against imposition.

It is important that investments of savings banks should not be subjected to sudden sales, during a disturbed state of financial affairs, to meet unusual demands of depositors. These investments are generally made when money is plenty and stocks are high; and the sale of the latter in periods of pecuniary re-

vulsion, necessarily results in large losses to these institutions. The necessity for such a procedure would be measurably obviated if a cash balance, somewhat proportionate to the amount of depositors, should be kept within reach, and the rate of interest paid to depositors be restricted to four or five per cent. A well governed savings bank would then be able to accumulate, gradually, a surplus sufficiently large to meet any exigency that might arise; and the fund could be held as a reserve to make good any losses by a forced sale of securities at depreciated rates. The permanent depositors could enjoy the benefit of this course by extra dividends, when the extent of the surplus should warrant. This also would have the effect to encourage depositors to continue their savings, unmolested, with a view to avail themselves of such an advantage.

Most of the savings banks, in their rules, reserve the right to require notice from depositors before paying their demands; but it is believed few institutions have availed themselves of this requirement even during the panic of 1857, or during the more recent extraordinary demands. Belonging for the most part to a class of the community not well informed on financial topics, the depositors in savings banks are easily alarmed for the safety of their earnings, and hence, from casual causes, not unfrequently withdraw their deposits; to the forfeiture of accruing interest, and not unfrequently to the ultimate loss of the principal. It is believed, therefore, that the true interests of depositors would be promoted by requiring notice of the intended withdrawal of deposits; except in special cases of necessity, within the discretion of the trustees.

The object of a savings bank is to encourage and protect the savings of a class, who, until the establishment of such institutions, have not usually been provident in that respect. The complete safety of the principal ought to be the paramount consideration; and, as has already been observed, the allowance of any particular rate of interest should be secondary. It is generally most difficult to meet with satisfactory securities, paying fair rates of interest, when savings banks receive most money. The temptation of investing for mere high rates of interest should be carefully guarded against, and investments restricted by the Legislature to securities of permanent and undoubted character. The disposition to invest in hazardous loans, paying high rates of interest, would in a great measure be avoided if

lower rates were paid to depositors. Experience has proved that the rates now paid by the oldest institutions in the country (four and five per cent.) are as high as judicious investments will warrant. Uniformity in this respect, as well as in the rules and regulations by which institutions of this character conduct their business, would tend to strengthen the existing banks, and render them more permanently useful to the community.

The principal features in the operations of the savings banks of this State, for the years ending with the 31st of December, 1860 and 1861, will be gathered from the following comparative statement:

	1860.	1861.	Decrease.	Increase.
Number of Institutions.....	71	74	.....	3
Number of open accounts.....	300,693	300,511	182	.....
Amounts due depositors	\$67,440,397	\$64,083,119	\$3,357,278	.....
Amounts deposited.....	34,934,271	27,439,855	7,494,416	.....
Amounts withdrawn.....	28,308,414	33,678,073	.....	\$5,369,659
Amount of interest received.....	3,682,158	3,954,724	.....	272,566
Amount of interest credited depositors.	2,834,249	3,088,921	.....	254,672

The following clerks were employed during the year 1861, viz :

	Annual Salary.
Alexander H. Dennis	\$200 00
Nathaniel D. Hare, to 1st April, 1861, at the rate of \$200, from 1st April, 1861.....	500 00
Edward Hand, from 1st April, 1861.....	200 00
Daniel W. Mills, (dec'd) 3d April, 1861, at the rate of	100 00

Expenses.

Paid salaries to clerks.....	\$800 00
Paid for printing blanks, postage, &c.....	41 00
	<u>\$841 00</u>

These expenses are required to be apportioned among the savings banks in proportion to the amount of deposits held by them severally. The rate of charge adequate to cover the expenses of the last year, is one cent and one mill on a thousand dollars. The result is that the chief burthen of expense is thrown upon a few institutions, whilst others escape entirely, the amount being too small to warrant the trouble and expense of collecting by draft. As the actual expense of supervision is no greater in the case of the larger institutions than in those of less

extent, the charges should be equitably apportioned, so that each bank should pay something towards reimbursing the treasury.

In conclusion, the undersigned would urge upon the Legislature the imperative necessity of caution in granting charters for savings banks, both in regard to an increase of their number and in the adoption of safeguards for the proper management of the trusts thus authorized. The immunity from loss which has characterized the past, is creditable to existing institutions; but it forms no apology for a relaxation of the severest scrutiny into the character, object and necessity, of each application for an extension of a system fraught with great benefits where properly managed, but which may become a serious scourge to the community if made the subject of undue expansion.

All of which is respectfully submitted.

H. H. VAN DYCK,
Superintendent.

COMPARATIVE SYNOPSIS—SAVINGS BANKS.

REPORT ON SAVINGS BANKS

9

RESOURCES.	January 1, 1861.		July 1, 1861.		January 1, 1862.	
Bonds and mortgages .....	.....	\$26,455,007	.....	\$26,842,796	.....	\$25,043,014
Estimated value of mortgaged premises	\$64,288,421	.....	\$63,367,334	.....	\$59,594,406	.....
Stock investments .....	.....	33,550,918	.....	30,753,045	.....	30,821,621
Par value of stocks	33,726,985	.....	30,783,834	.....	31,025,582	.....
Estimated value of stocks	32,642,376	.....	27,710,727	.....	27,469,299	.....
Stocks upon which money has been loaned, par value	1,749,410	.....	1,446,050	.....	1,562,788	.....
Amount loaned thereon .....	.....	1,429,153	.....	913,108	.....	1,073,899
Amount loaned on personal securities .....	.....	49,177	.....	45,247	.....	155,718
Amount invested in real estate .....	.....	1,042,305	.....	990,728	.....	1,010,295
Cash on deposit in banks .....	.....	6,485,130	.....	7,064,127	.....	6,251,410
Cash on hand not deposited in banks .....	.....	1,197,169	.....	1,456,146	.....	1,937,385
Amount loaned or deposited, not included in above heads .....	.....	152,256	.....	249,820	.....	177,155
Miscellaneous resources .....	.....	48,541	.....	60,730	.....	93,428
Add for cents .....	.....	96	.....	102	.....	108
		<u>\$70,409,752</u>		<u>\$68,375,839</u>		<u>\$67,144,233</u>
LIABILITIES.						
Amount due depositors .....	.....	\$67,440,397	.....	\$65,173,024	.....	\$64,083,119
Miscellaneous .....	.....	20,095	.....	20,036	.....	4,986
Excess of assets over liabilities .....	.....	2,949,195	.....	3,182,713	.....	8,056,066
Add for cents .....	.....	66	.....	66	.....	31
		<u>\$70,409,752</u>		<u>\$68,375,839</u>		<u>\$67,144,233</u>
Number of institutions in operation .....	.....	71	.....	74	.....	74
Number of open accounts .....	.....	300,693	.....	.....	.....	300,511
Total deposited during calendar year .....	.....	\$34,934,271	.....	.....	.....	\$27,439,855
Total withdrawn during calendar year .....	.....	28,308,414	.....	.....	.....	33,678,073
Total interest received during calendar year .....	.....	3,682,158	.....	.....	.....	3,954,724
Total interest credited depositors during calendar year .....	.....	2,834,249	.....	.....	.....	3,088,921

The three institutions which did not report 1st January, 1861, but which reported 1st July, 1861, and 1st January, 1862, are :

	Assets.	Due depositors.	Excess of assets.
East Brooklyn Savings Bank, not organized 1st January, 1861	\$14,219	\$14,182	\$37
Jefferson County Savings Bank, failed October, 1860, re-organized 1862.....	38,446	38,159	287
Kings County Savings Institution, not organized 1st January, 1861	55,698	55,698	....
	<u>\$108,363</u>	<u>\$108,039</u>	<u>\$324</u>
Excess as above.....		324	
		<u><u>\$108,363</u></u>	

SUMMARY, showing the aggregate of the resources and liabilities of the savings institutions of the State of New York, as exhibited by their reports to the Superintendent of the Banking Department of the State of New York, of their condition on the morning of the 1st day of January, 1862.

Resources.

Bonds and mortgages.....	\$25,643,014
Estimated value of mortg'd premises \$59,594,466	
Stock investments.....	30,821,821
Par value of stocks..... 31,025,582	
Estimated value of the same..... 27,469,299	
Stocks upon which money has been loaned, par value..... 1,562,788	
Amount loaned thereon.....	1,073,899
Amount loaned on personal securities.....	135,718
Amount invested in real estate.....	1,010,295
Cash on deposit in banks.....	6,251,410
Cash on hand not deposited in banks.....	1,937,385
Amount loaned or deposited, not included in the above heads.....	177,155
Miscellaneous.....	93,428
Add for cents.....	108
	\$67,144,233

Liabilities.

Amount due depositors.....	\$64,083,119
Miscellaneous.....	4,986
Excess of assets over liabilities.....	3,056,066
Add for cents.....	62
	\$67,144,233

Number of institutions in operation, 74. Number of open accounts, 300,511. Average to each depositor, \$213.21.

Total am't deposited during the calendar year 1861	\$27,439,855
Total am't withdrawn do do do	33,678,073
Total am't received for interest do do do	3,954,724
Total amount of interest placed to credit of depositors during the calendar year 1861.....	3,088,921

	Amount due depositors.	Resources.
1. Albany Savings Bank, Albany..	\$1,199,628	\$1,277,928
2. Albany City Savings Institution, Albany	206,676	206,676
3. Albany Exchange Savings Bank, Albany	47,114	47,114
4. Atlantic Savings Bank, New York	123,216	130,013
5. Auburn Savings Institution, Au- burn	175,708	178,764
6. Bank for Savings in the city of New York, N. Y.	8,821,750	9,329,555
7. Bowery Savings Bank, New York	9,173,033	9,816,471
8. Broadway Savings Institution, New York	1,010,727	1,064,341
9. Brockport Savings Bank, Brock- port	3,082	3,144
10. Brooklyn Savings Bank, Brooklyn	3,513,250	3,722,686
11. Buffalo Savings Bank, Buffalo ..	1,219,784	1,281,579
12. Central City Savings Institution, Utica	9,518	9,518
13. Central Savings Bank of Troy, Troy	39,109	39,109
14. Chenango County Savings Bank, Norwich	8,435	8,483
15. Citizens Savings Bank, New York	55,166	55,166
16. Cohoes Savings Institution, Coh's	66,829	66,857
17. Commercial Savings Bank of Troy	170,155	170,155
18. Corning Savings Bank, Corning.	436	465
19. Dime Savings Bank, Brooklyn ..	356,676	356,813
20. Dry Dock Savings Institution, New York	2,110,890	2,145,851
21. East Brooklyn Savings Bank, Brooklyn	14,182	14,219
22. East River Savings Institution, New York	1,068,243	1,113,331
23. Elmira Savings Bank, Elmira ..	4,569	4,940

	Amount due depositors.	Resources.
24. Emigrant Industrial Savings Bank, New York.....	\$2,425,169	\$2,568,891
25. Emigrant Savings Bank of Buffalo, Buffalo.....	24,202	24,202
26. Erie County Savings Bank, Buffalo.....	1,027,891	1,043,805
27. Fishkill Savings Institute, Fishkill.....	52,218	55,154
28. Franklin Savings Bank, N. Y....	6,140	6,203
29. German Savings Bank, N. Y....	889,042	902,885
30. Greenwich Savings Bank, N. Y..	3,402,409	3,584,743
31. Hudson River Savings Institution, Hudson.....	80,109	82,161
32. Institution for the savings of Merchants' clerks, N. Y.....	1,896,247	1,954,073
33. Irving Savings Institution, N. Y.	1,064,208	1,089,179
34. Jefferson County Savings Bank, Watertown.....	38,159	38,446
35. Kings County Savings Institution, Brooklyn.....	55,698	55,698
36. Manhattan Savings Institution, N. Y.....	2,676,907	2,771,981
37. Manufacturers' Savings Bank, Troy.....	122,368	122,443
38. Mariners' Savings Institution, N. Y.....	731,585	752,179
* Market Savings Bank, Troy....	not organized.	
39. Mechanics & Farmers' Savings Bank, Albany.....	542,977	542,977
40. Mechanics' & Traders' Savings Institution, N. Y.....	452,031	504,671
41. Monroe County Savings Institution, Rochester.....	628,777	640,531
* Mount Vernon Savings Bank, Mount Vernon.....	not organized.	
42. Mutual Savings Bank of Troy, Troy.....	42,572	42,572
43. Newburgh Savings Bank, Newburgh.....	250,604	261,713

	Amount due depositors.	Resources.
44. Niagara County Savings Bank, Lockport	\$2,896	\$3,122
45. Onondaga County Savings Bank, Syracuse	438,473	441,095
46. Oswego City Savings Bank, Os- wego	40,931	41,281
47. Peekskill Savings Bank.....	32,479	34,015
Peoples' Savings Bank of Dutch- ess county.....	not organized.	
48. Poughkeepsie Savings Bank, Poughkeepsie.....	446,118	478,375
49. Queens' County Savings Bank, Flushing.....	28,587	28,587
50. Rhinebeck Savings Bank, Rhine- beck	7,047	7,353
51. Rochester Savings Bank, Roch- ester	2,096,800	2,220,053
52. Rockland county Savings Bank, Piermont	28	28
53. Rome Savings Bank, Rome.....	69,472	74,932
54. Rose Hill Savings Bank, N. Y...	111,285	115,898
55. Sag Harbor Savings Bank, Sag Harbor.....	40,503	41,361
56. Savings Bank of Utica, Utica...	565,435	595,694
57. Schenectady Savings Bank.....	315,940	334,452
58. Seamen's Bank for Savings, N. Y	8,215,686	8,593,424
* Seneca Falls Savings Bank, Seneca Falls.....	not organized.	
59. Sing Sing Savings Bank, Sing Sing	42,358	44,027
60. Sixpenny Savings Bank, Albany	13,614	13,614
61. Sixpenny Savings Bank of the Empire City, N. Y.....	167,451	169,326
62. South Brooklyn Savings Institu- tion, Brooklyn.....	920,774	960,518
63. Southold Savings Bank, Southold	63,483	64,052
64. State Savings Bank of Troy, Troy.....	85,473	85,473
65. Syracuse Savings Institution, Syracuse	552,722	557,608

	Amount due depositors.	Resources.
66. Third Avenue Savings Bank, N. Y.....	\$363,826	\$368,954
67. Troy Savings Bank, Troy.....	796,268	809,204
68. Ulster County Savings Institu- tion, Kingston.....	178,896	187,865
69. Union Dime Savings Institution, N. Y.....	320,006	326,464
70. Union Savings Bank, Albany... Union Savings Bank of Batavia, Batavia.....	16,065	16,065
• Wayne County Savings Bank, Lyons.....	not organized.	
71. Westchester Co. Savings Bank, Tarrytown.....	not organized.	
72. Western Savings Bank of Buffa- lo, Buffalo.....	181,779	187,824
73. Williamsburgh Savings Bank, Brooklyn.....	166,852	166,852
74. Yonkers Savings Bank, Yonkers	1,916,041	2,007,297
	78,342	81,704

* Incorporated, Session of 1861.

1. ALBANY SAVINGS BANK, ALBANY.

Resources.

Total amount of bonds and mortgages.....	\$217,688 80
Total amount of stock investments.....	734,490 00
Cash on deposit in banks.....	325,749 65
	\$1,277,928 45

Liabilities.

Total amount due to depositors.....	\$1,199,628 15
Excess of assets over all liabilities.....	78,300 30
	\$1,277,928 45

The number of open accounts on the morning of January 1, 1862, was 4,668.

The total amount deposited during the calendar year 1861, was.....	\$436,800 97
The total amount withdrawn during the calendar year 1861, was.....	641,742 83
The amount received for interest during the calendar year, was.....	60,408 08
The amount of interest placed to the credit of depositors for the same period, was.....	57,574 63

2. ALBANY CITY SAVINGS INSTITUTION, ALBANY.

Resources.

Total amount of bonds and mortgages.....	\$42,301 75
Total amount of stock investments.....	43,660 00
Cash on deposit in banks.....	120,714 11
	\$206,676 86

Liabilities.

Total amount due to depositors	\$206,676 86
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The number of open accounts on the morning of January 1, 1862, was 672.

The total amount deposited during the calendar year 1861, was	\$84,938 95
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The total amount withdrawn during the calendar year 1861, was	105,864 11
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The amount received for interest during the calendar year 1861, was	9,567 63
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The amount of interest placed to the credit of depositors for the same period, was	9,567 63
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3. ALBANY EXCHANGE SAVINGS BANK, ALBANY.

Resources.

Cash on deposit in banks	\$47,114 36
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Liabilities.

Total amount due to depositors	\$47,114 36
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The number of open accounts on the morning of January 1, 1862, was 142.

The total amount deposited during the calendar year 1861, was	\$17,283 17
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The total amount withdrawn during the calendar year 1861, was	28,654 77
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The amount received for interest during the calendar year 1861, was	2,466 61
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The amount of interest placed to the credit of depositors for the same period, was	2,466 61
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4. ATLANTIC SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$53,454 76
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Total amount of stock investments	47,000 00
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Cash on deposit in banks	17,030 44
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Cash on hand not deposited in bank	10,807 96
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Value of furniture and fixtures paid for by subscription	1,720 31
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	\$130,013 47
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Liabilities.

Total amount due to depositors	\$123,216 15
Excess of assets over all liabilities	6,797 32
	\$130,013 47

The number of open accounts on the morning of January 1, 1862, was 841.

The total amount deposited during the calendar year 1861, was	\$123,694 63
The total amount withdrawn during the calendar year 1861, was	81,631 25
The amount received for interest during the calendar year 1861, was	6,543 67
The amount of interest placed to the credit of depositors for the same period, was	3,959 38

5. AUBURN SAVINGS INSTITUTION, AUBURN.

Resources.

Total amount of bonds and mortgages	\$107,253 33
Total amount loaned upon stocks	8,650 00
Total amount loaned upon personal securities	12,804 24
Total amount loaned on notes with mortgage collaterals	6,800 00
Cash on deposit in banks	36,498 55
Total amount of cash on hand, not deposited in bank	1,146 13
Office fixtures, furniture and safes	612 24
Loaned on bonds of the Auburn Gas Light Co....	5,000 00
	\$178,764 49

Liabilities.

Total amount due to depositors	\$175,708 43
Excess of assets over all liabilities	3,056 06
	\$178,764 49

The number of open accounts on the morning of January 1, 1862, was 1,158.

The total amount deposited during the calendar year 1861, was.....	\$244,331 37
The total amount withdrawn during the calendar year 1861, was.....	233,802 78
The amount received for interest during the calendar year 1861, was.....	10,428 68
The amount of interest placed to the credit of depositors for the same period, was.....	7,241 43

6. BANK FOR SAVINGS IN THE CITY OF NEW YORK, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$3,014,900 00
Total amount of stock investments.....	5,559,235 09
Total amount invested in real estate.....	75,000 00
Cash on deposit in banks.....	615,669 74
Total amount of cash on hand, not deposited in bank.	64,750 51
	\$9,329,555 34

Liabilities.

Total amount due to depositors.....	\$8,821,750 00
Excess of assets over all liabilities.....	507,805 34
	\$9,329,555 34

The number of open accounts on the morning of January 1, 1862, was 47,391.

The total amount deposited during the calendar year 1861, was.....	\$1,689,038 81
The total amount withdrawn during the calendar year 1861, was.....	3,317,933 15
The amount received for interest during the calendar year 1861, was.....	571,970 37
The amount of interest placed to the credit of depositors for the same period, was.....	388,027 45

7. BOWERY SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$3,803,550 00
Total amount of stock investments.....	4,970,619 00
Total amount invested in real estate	100,000 00
Cash on deposit in banks.....	130,416 48
Total amount of cash on hand, not deposited in bank	811,886 32
	\$9,816,471 80

Liabilities.

Total amount due to depositors	\$9,173,033 68
Excess of assets over all liabilities	643,438 12
	\$9,816,471 80

The number of open accounts on the morning of January 1, 1862, was 39,601.

The total amount deposited during the calendar year 1861, was.....\$3,804,520 00

The total amount withdrawn during the calendar year 1861, was.....5,345,570 35

The amount received for interest during the calendar year 1861, was.....563,678 04

The amount of interest placed to the credit of depositors for the same period, was.....419,088 95

8. BROADWAY SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$430,550 00
Total amount of stock investments.....	405,100 00
Total amount loaned upon stocks.....	53,650 00
Cash on deposit in banks.....	36,649 27
Total amount of cash on hand, not deposited in bank	138,392 19
	\$1,064,341 46

Liabilities.

Total amount due to depositors	\$1,010,727 19
Excess of assets over all liabilities.....	53,614 27
	<u>\$1,064,341 46</u>

The number of open accounts on the morning of January 1, 1862, was 3,759.

The total amount deposited during the calendar year 1861, was.....	\$353,750 94
The total amount withdrawn during the calendar year 1861, was.....	501,834 80
The amount received for interest during the calendar year 1861, was.....	70,794 70
The amount of interest placed to the credit of depositors for the same period, was.....	<u>56,016 58</u>

9. BROCKPORT SAVINGS BANK, BROCKPORT.

Resources.

Total amount of bonds and mortgages.....	\$1,164 11
Total amount loaned upon personal securities....	189 59
Cash on deposit in banks.....	1,790 94
	<u>\$3,144 64</u>

Liabilities.

Total amount due to depositors.....	\$3,082 18
Excess of assets over all liabilities	62 46
	<u>\$3,144 64</u>

The number of open accounts on the morning of January 1, 1862, was 52.

The total amount deposited during the calendar year 1861, was	\$5,632 78
The total amount withdrawn during the calendar year 1861, was	5,930 41
The amount received for interest during the calendar year 1861, was	192 13
The amount of interest placed to the credit of depositors for the same period, was.....	<u>124 66</u>

10. BROOKLYN SAVINGS BANK, BROOKLYN.

Resources.

Total amount of bonds and mortgages	\$1,146,925 00
Total amount of stock investments	2,398,087 38
Total amount loaned upon stocks	50,000 00
Total amount invested in real estate exclusive of banking house	10,000 00
Cash on deposit in banks	100,000 00
Total amount of cash on hand not deposited in bank	17,673 78
	\$3,722,686 16

Liabilities.

Total amount due to depositors	\$3,513,250 35
Excess of assets over all liabilities	209,435 81
	\$3,722,686 16

The number of open accounts on the morning of January 1, 1862, was 14,411.

The total amount deposited during the calendar year 1861, was	\$1,129,941 00
The total amount withdrawn during the calendar year 1861, was	1,481,997 71
The amount received for interest during the calen- dar year 1861, was	227,017 79
The amount of interest placed to the credit of de- positors for the same year, was	183,967 65

11. BUFFALO SAVINGS BANK, BUFFALO.

Resources.

Total amount of bonds and mortgages	\$795,308 81
Total amount of stock investments	318,380 00
Total amount invested in real estate and banking house	17,611 40
Cash on deposit in banks	71,717 23
Total amount of cash on hand not deposited in b'k	78,561 78
	\$1,281,579 22

Liabilities.

Total amount due to depositors.....	\$1,219,784 31
Excess of assets over all liabilities.....	61,794 91
	<u>\$1,281,579 22</u>

The number of open accounts on the morning of January 1, 1862, was 8,056.

The total amount deposited during the calendar year 1861, was.....	\$838,684 19
The total amount withdrawn during the calendar year 1861, was.....	862,780 76
The amount received for interest during the calendar year 1861, was.....	79,722 83
The amount of interest placed to the credit of depositors for the same period, was.....	66,468 09

12. CENTRAL SAVINGS BANK OF TROY, TROY.

Resources.

Cash on deposit in banks.....	<u>\$39,109 07</u>
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Liabilities.

Total amount due to depositors.....	<u>\$39,109 07</u>
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The number of open accounts on the morning of January 1, 1862, was 190.

The total amount deposited during the calendar year 1861, was.....	\$21,602 80
The total amount withdrawn during the calendar year 1861, was.....	24,742 26
The amount received for interest during the calendar year 1861, was.....	1,887 19
The amount of interest placed to the credit of depositors for the same period, was.....	<u>1,887 19</u>

13. CENTRAL CITY SAVINGS INSTITUTION, (closing) UTICA.

Resources.

Total amount of bonds and mortgages.....	\$2,587 50
Total amount loaned upon personal securities....	4,457 83

Total amount invested in real estate	\$2,273 42
Total amount of cash on hand, not deposited in bank	183 88
Deficit	16 24
	\$9,518 87

Liabilities.

Total amount due to depositors	\$9,518 87
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The number of open accounts on the morning of January 1st 1862, was 64.

The total amount deposited during the calendar year 1861, was	\$6,958 86
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The total amount withdrawn during the calendar year 1861, was	15,881 80
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The amount received for interest during the calen- dar year 1861, was	666 14
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The amount of interest placed to the credit of de- positors for the same period, was	599 65
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14. CHENANGO COUNTY SAVINGS BANK, NORWICH.

Resources.

Cash on hand, not deposited in bank	\$8,483 19
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Liabilities.

Total amount due to depositors	\$8,435 00
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Excess of assets over all liabilities	48 19
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\$8,483 19

The number of open accounts on the morning of January 1st, 1862, was 40.

The total amount deposited during the calendar year 1861, was	\$13,050 47
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The total amount withdrawn during the calendar year 1861, was	15,076 43
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The amount received for interest during the calen- dar year 1861, was	335 23
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The amount of interest placed to the credit of de- positors for the same period, was	142 52
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15. CITIZEN'S SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$5,500 00
Total amount of stock investments.....	25,445 00
Total amount loaned upon stocks.....	15,070 00
Total amount personal property.....	2,032 14
Cash on deposit in banks.....	3,075 44
Total amount of cash on hand, not deposited in bank	2,615 25
Total amount loaned or deposited and not included under either of the above heads.....	1,428 17
	\$55,166 00

Liabilities.

Total amount due to depositors.....	\$55,166 00

The number of open accounts on the morning of January 1st, 1862, was 735.

The total amount deposited during the calendar year 1861, was.....	\$66,415 52
The total amount withdrawn during the calendar year 1861, was.....	39,017 13
The amount received for interest during the calen- dar year 1861, was.....	1,801 48
The amount of interest placed to the credit of de- positors for the same period, was.....	1,360 94

16. COHOES SAVINGS INSTITUTION, COHOES.

Resources.

Total amount of bonds and mortgages.....	\$1,886 72
Total amount of stock investments.....	10,000 00
Cash on deposit in banks.....	51,743 41
Total amount of cash on hand, not deposited in bank	3,227 68
	\$66,857 81

Liabilities.

Total amount due to depositors.....	\$66,829 81
Excess of assets over all liabilities.....	28 00
	\$66,857 81

The number of open accounts on the morning of January 1st, 1862, was 381.

The total amount deposited during the calendar year 1861, was.....	\$50,233 11
The total amount withdrawn during the calendar year 1861, was.....	65,269 89
The amount received for interest during the calendar year 1861, was.....	2,821 15
The amount of interest placed to the credit of depositors for the same period, was.....	2,793 15

17. COMMERCIAL SAVINGS BANK, TROY.

Resources.

Cash on deposit in banks.....	\$170,155 60

Liabilities.

Total amount due to depositors	\$170,155 60

The number of open accounts on the morning of January 1st, 1862, was 799.

The total amount deposited during the calendar year 1861, was	\$101,420 34
The total amount withdrawn during the calendar year 1861, was	101,214 30
The amount received for interest during the calendar year 1861, was.....	8,123 35
The amount of interest placed to the credit of depositors for the same period, was.....	8,123 35

18. CORNING SAVINGS BANK, CORNING.

Resources.

Total amount of bond and mortgages.....	\$200 00
Total amount of stock investments	150 00
Total amount of cash on hand not deposited in bank.....	115 31
	\$465 31

Liabilities.

Total amount due to depositors	\$436 86
Excess of assets over all liabilities	28 45
	\$465 31

The number of open accounts on the morning of January 1st, 1862, was 27.

The total amount deposited during the calendar year 1861, was	\$515 53
The total amount withdrawn during the calendar year 1861, was	576 30
The amount received for interest during the calendar year 1861, was	42 20
The amount of interest placed to the credit of depositors for the same period, was	17 87

19. DIME SAVINGS BANK OF BROOKLYN, BROOKLYN.

Resources.

Total amount of bonds and mortgages	\$150,650 00
Total amount of stock investment	185,983 79
Total amount loaned upon stocks	3,000 00
Cash on deposit in banks	15,279 84
Total amount of cash on hand, not deposited in bank	1,900 09
	\$356,813 72

Liabilities.

Total amount due to depositors	\$356,676 71
Excess of assets over all liabilities	137 01
	\$356,813 72

The number of open accounts on the morning of January 1st, 1862, was 6,905.

The total amount deposited during the calendar year 1861, was	\$283,927 08
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The total amount withdrawn during the calendar year 1861, was	\$202,943 53
The amount received for interest during the calendar year 1861, was	17,439 85
The amount of interest placed to the credit of depositors for the same period, was	14,692 98

20. DRY DOCK SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$728,620 00
Total amount of stock investments	1,016,500 00
Total amount loaned upon stocks	42,300 00
Total amount invested in real estate	55,081 35
Cash on deposit in banks	225,168 07
Total amount of cash on hand, not deposited in bank	78,182 19
	<u>\$2,145,851 61</u>

Liabilities.

Total amount due to depositors	\$2,110,890 92
Excess of assets over all liabilities	34,960 69
	<u>\$2,145,851 61</u>

The number of open accounts on the morning of January 1st, 1862, was 7,295.

The total amount deposited during the calendar year 1861, was	\$786,463 00
The total amount withdrawn during the calendar year 1861, was	755,486 28
The amount received for interest during the calendar year 1861, was	108,565 62
The amount of interest placed to the credit of depositors for the same period, was	103,849 71

21. EAST BROOKLYN SAVINGS BANK OF THE CITY OF BROOKLYN, BROOKLYN.

Resources.

Total amount of bonds and mortgages	\$500 00
Total amount of stock investments	11,000 00

REPORT ON SAVINGS BANKS.

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Cash on deposit in banks.....	\$1,000 00
Total amount of cash on hand not deposited in bank.....	641 79
Total amount loaned or deposited and not included under either of the above heads, consisting of furniture, &c.....	1,078 02
This bank commenced business April 13, 1861.	

\$14,219 81

Liabilities.

Total amount due to depositors	\$14,182 80
Excess of assets over all liabilities.....	37 01

\$14,219 81

The number of open accounts on the morning of January 1, 1862, was 374.

The total amount deposited during the calendar year 1861, was

\$20,666 92

The total amount withdrawn during the calendar year 1861, was.....

6,509 13

The amount received for interest during the calendar year 1861, was

60 00

The amount of interest placed to the credit of depositors for the same period, was.....

25 01

22. EAST RIVER SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$388,605 00
Total amount of stock investments.....	561,200 00
Total amount loaned upon stocks.....	34,000 00
Total amount invested in real estate.....	54,936 73
Cash on deposit in banks.....	60,446 62
Total amount of cash on hand, not deposited in bank.....	14,143 07

\$1,113,331 42

Liabilities.

Total amount due to depositors	\$1,068,243 91
Excess of assets over all liabilities.....	45,087 51

\$1,113,331 42

The number of open accounts on the morning of January 1, 1862, was 5,075.

The total amount deposited during the calendar year 1861, was	\$402,234 07
The total amount withdrawn during the calendar year 1861, was	555,884 29
The amount received for interest during the calendar year 1861, was	64,009 56
The amount of interest placed to the credit of depositors for the same period, was	60,660 04

23. ELMIRA SAVINGS BANK, ELMIRA.

Resources.

Total amount of bonds and mortgages	\$4,940 00
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Liabilities.

Total amount due to depositors	\$4,569 13
Amount due to treasurer	8 18
Excess of assets over all liabilities	362 69
	\$4,940 00

The number of open accounts on the morning of January 1, 1862, was 35.

The total amount deposited during the calendar year 1861, was	\$2,249 22
The total amount withdrawn during the calendar year 1861, was	1,441 28
The amount received for interest during the calendar year 1861, was	241 12
The amount of interest placed to the credit of depositors for the same period, was	180 70

24 .EMIGRANT INDUSTRIAL SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$1,291,633 25
Total amount of stock investments	735,667 15
Total amount loaned upon stocks	162,945 00

REPORT ON SAVINGS BANKS.

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Total amount invested in real estate	\$122,640 09
Cash on deposit in banks	199,635 15
Total amount of cash on hand not deposited in bank	56,371 14
	\$2,568,891 78

Liabilities.

Total amount due to depositors	\$2,425,169 11
Excess of assets over all liabilities	143,722 67
	\$2,568,891 78

The number of open accounts on the morning of January 1, 1862, was 9,280.

The total amount deposited during the calendar year 1861, was	\$1,024,320 46
The total amount withdrawn during the calendar year 1861, was	1,290,739 52
The amount received for interest during the calendar year 1861, was	181,570 58
The amount of interest placed to the credit of depositors for the same period, was	128,112 24

25. EMIGRANT SAVINGS BANK OF BUFFALO, BUFFALO.

Resources.

Total amount of bonds and mortgages	\$575 00
Total amount of stock investments	5,000 00
Cash on deposit in banks	5,650 48
Total amount of cash on hand not deposited in bank	3,444 35
Total amount loaned or deposited and not included under either of the above heads	8,337 34
Bank safe and furniture	350 00
Amount of interest accrued to January 1	845 50
	\$24,202 67

Liabilities.

Total amount due to depositors	\$24,202 67

The number of open accounts on the morning of January 1, 1862, was 218.

The total amount deposited during the calendar year 1861, was	\$57,761 28
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The total amount withdrawn during the calendar year 1861, was	\$53,719 53
The amount received for interest during the calendar year 1861, was	673 28
The amount of interest placed to the credit of depositors for the same period, was	1,138 93

26. ERIE COUNTY SAVINGS BANK, BUFFALO.

Resources.

Total amount of bonds and mortgages	\$458,482 81
Total amount of stock investments	421,239 51
Total amount invested in real estate	6,387 53
Cash on deposit in banks	105,105 00
Total amount of cash on hand not deposited in bank	52,590 43
	<u>\$1,043,805 28</u>

Liabilities.

Total amount due to depositors	\$1,027,891 36
Excess of assets over all liabilities	15,913 92
	<u>\$1,043,805 28</u>

The number of open accounts on the morning of January 1, 1862, was 6,557.

The total amount deposited during the calendar year 1861, was	\$1,766,245 33
The total amount withdrawn during the calendar year 1861, was	1,608,294 27
The amount received for interest during the calendar year 1861, was	60,087 77
The amount of interest placed to the credit of depositors for the same period, was	43,689 07

27. FISHKILL SAVINGS INSTITUTE, FISHKILL.

Resources.

Total amount of bonds and mortgages	\$16,300 00
Total amount of stock investments	19,000 00
Cash on deposit in banks	19,550 44
Personal estate and expense account since its organization, 14th March, 1857	304 13
	<u>\$55,154 57</u>

Liabilities.

Total amount due to depositors	\$52,218 76
Total number of depositors 290.	
Average balance to each account.....	\$180 06
Balance of interest account.....	2,365 48
Balance of premium account.....	425 00
Suspense account	145 33
Excess of assets over all liabilities.....	2,935 81
	\$55,154 57

The number of open accounts on the morning of January 1, 1862, was 290.

The total amount deposited during the calendar year 1861, was.....	\$24,577 78
The total amount withdrawn during the calendar year 1861, was	22,490 80
The amount received for interest during the calendar year 1861, was.....	3,052 78
The amount of interest placed to the credit of depositors for the same period, was.....	2,241 78

28. FRANKLIN SAVINGS BANK, NEW YORK.

Resources.

Total amount of stock investments.....	\$4,897 20
Cash on deposit in banks.....	1,069 31
Total amount of cash on hand, not deposited in bank	236 98
	\$6,203 49

Liabilities.

Total amount due to depositors.....	\$6,140 30
Excess of assets over all liabilities.....	63 19
	\$6,203 49

The number of open accounts on the morning of January 1st, 1862, was 113.

The total amount deposited during the calendar year 1861, was.....	\$9,692 66
[A. 111.—S. 80.]	3

The total amount withdrawn during the calendar year 1861, was.....	\$4,785 63
The amount received for interest during the calendar year 1861, was.....	113 28
The amount of interest placed to the credit of depositors for the same period, was.....	227 82

29. GERMAN SAVINGS BANK, IN THE CITY OF NEW YORK, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$267,600 00
Total amount of stock investments.....	495,286 24
Cash on deposit in banks.....	120,608 58
Total amount of cash on hand, not deposited in bank.....	18,126 41
Total amount loaned or deposited and not included under either of the above heads, being deposited in the United States Trust Co., in New York..	75 57
Furniture, fixtures, &c.....	1,189 04
	\$902,885 84

Liabilities.

Total amount due to depositors.....	\$889,042 49
Excess of assets over all liabilities.....	13,843 35
	\$902,885 84

The number of open accounts on the morning of January 1st, 1862, was 5,085.

The total amount deposited during the calendar year 1861, was.....	\$578,103 46
The total amount withdrawn during the calendar year 1861, was.....	479,607 11
The amount received for interest during the calendar year 1861, was.....	49,034 77
The amount of interest placed to the credit of depositors for the same period, was.....	16,888 68

30. GREENWICH SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$1,400,341 00
Total amount of stock investments.....	1,797,500 00
Total amount invested in real estate.....	50,000 00
Cash on deposit in banks.....	295,428 33
Total amount of cash on hand, not deposited in bank	41,473 83
	\$3,584,743 16

Liabilities.

Total amount due to depositors.....	\$3,402,409 85
Excess of assets over all liabilities.....	182,333 31
	\$3,584,743 16

The number of open accounts on the morning of January 1st, 1862, was 15,771.

The total amount deposited during the calendar year 1861, was.....	\$935,310 00
The total amount withdrawn during the calendar year 1861, was.....	1,594,089 96
The amount received for interest during the calen- dar year 1861, was.....	229,218 54
The amount of interest placed to the credit of de- positors for the same period, was.....	162,850 49

31. HUDSON CITY SAVINGS INSTITUTION, HUDSON.

Resources.

Total amount of bonds and mortgages	\$54,057 88
Total amount of stock investments.....	3,500 00
Cash on deposit in banks.....	3,516 24
Total amount of cash on hand, not deposited in bank	567 40
Total amount loaned or deposited and not included under either of the above heads.....	19,470 00
Iron safe, furniture and fixtures.....	600 00
Balance of accrued interest.....	450 00
	\$82,161 52

Liabilities.

Total amount due to depositors.....	\$80,109 94
Excess of assets over all liabilities.....	2,051 58
	\$82,161 52

The number of open accounts on the morning of January 1st, 1862, was 510.

The total amount deposited during the calendar year 1861, was.....	\$26,218 50
The total amount withdrawn during the calendar year 1861, was.....	33,645 13
The amount received for interest during the calendar year 1861, was.....	5,267 98
The amount of interest placed to the credit of depositors for the same period, was.....	3,850 00

32. INSTITUTION FOR THE SAVINGS OF MERCHANTS' CLERKS, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$722,200 00
Total amount of stock investments.....	1,011,698 77
Total amount loaned upon stocks.....	63,861 81
Total amount invested in real estate.....	64,675 59
Cash on deposit in banks.....	61,899 38
Total amount loaned or deposited and not included under either of the above heads, viz., deposited in the United States Trust Company.....	29,737 72
	\$1,954,073 27

Liabilities.

Total amount due to depositors	\$1,896,247 42
Excess of assets over all liabilities	57,825 85
	\$1,954,073 27

The number of open accounts on the morning of January 1st, 1862, was 7,736.

The total amount deposited during the calendar year 1861, was.....	\$723,477 46
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The total amount withdrawn during the calendar year 1861, was	\$1,040,437 24
The amount received for interest during the calendar year 1861, was	129,012 71
The amount of interest placed to the credit of depositors for the same period, was	109,921 42

33. IRVING SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$560,600 00
Total amount of stock investments	368,100 00
Total amount invested in real estate	24,000 00
Cash on deposit in banks	59,822 03
Total amount of cash on hand, not deposited in bank	76,657 84
	\$1,089,179 87

Liabilities.

Total amount due to depositors	\$1,064,208 56
Excess of assets over all liabilities	24,971 31
	\$1,089,179 87

The number of open accounts on the morning of January 1st, 1862, was 4,412.

The total amount deposited during the calendar year 1861, was	\$398,484 56
The total amount withdrawn during the calendar year 1861, was	420,823 95
The amount received for interest during the calendar year 1861, was	66,851 31
The amount of interest placed to the credit of depositors for the same period, was	58,239 05

34. JEFFERSON COUNTY SAVINGS BANK, WATERTOWN.

Resources.

Total amount of bonds and mortgages.....	\$13,225 73
Total amount of stock investments.....	500 00
Cash on deposit in banks.....	22,834 53
Total amount of cash on hand not deposited in bank	574 59
Total amount loaned Watertown water works, or deposited and not included under either of the above heads.....	1,000 00
Fixtures and furniture account.....	174 62
Interest due and unpaid, January 1, 1862.....	137 30
	\$38,446 77

This bank was re-organized and commenced business during the past year, 1861.

Liabilities.

Total amount due to depositors.....	\$38,159 77
Excess of assets over all liabilities.....	287 00
	\$38,446 77

The number of open accounts on the morning of January 1, 1862, was 211.

The total amount deposited during the calendar year 1861, was.....	\$67,467 65
The total amount withdrawn during the calendar year 1861, was	29,474 17
The amount received for interest during the calen- dar year 1861, was.....	159 86
The amount of interest placed to the credit of de- positors for the same period, was.....	142 21

35. KINGS COUNTY SAVINGS INSTITUTION, BROOKLYN.

Resources.

Total amount of bonds and mortgages	\$4,600 00
Total amount of stock investments.....	37,367 26
Total amount loaned upon stocks.....	3,000 00
Cash on deposit in banks.....	4,324 53
Total amount of cash on hand, not deposited in bank	4,656 90
Total amount loaned or deposited and not included under either of the above heads	1,749 33
	\$55,698 02

Liabilities.

Total amount due to depositors	\$55,698 02
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The number of open accounts on the morning of January 1, 1862, was 461.

The total amount deposited during the calendar year 1861, was	\$74,685 80
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The total amount withdrawn during the calendar year 1861, was	20,864 35
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The amount received for interest during the calendar year 1861, was	2,701 71
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The amount of interest placed to the credit of depositors for the same period, was	1,876 57
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36. MANHATTAN SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$975,387 66
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Total amount of stock investments	1,209,057 55
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Total amount loaned upon stocks	206,110 00
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Total amount invested in real estate	13,423 60
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Cash on deposit in banks	294,104 26
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Total amount of cash on hand not deposited in bank	73,898 38
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	\$2,771,981 45
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Liabilities.

Total amount due to depositors	\$2,676,907 66
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Excess of assets over all liabilities	95,073 79
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	\$2,771,981 45
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The number of open accounts on the morning of January 1, 1862, was 11,148.

The total amount deposited during the calendar year 1861, was	\$1,179,087 62
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The total amount withdrawn during the calendar year 1861, was	1,441,302 35
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The amount received for interest during the calendar year 1861, was	167,215 55
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The amount of interest placed to the credit of depositors for the same period, was	144,187 73
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37. MANUFACTURERS' SAVINGS BANK, TROY.

Resources.

Total amount of bonds and mortgages.....	\$3,800 00
Cash on deposit in banks.....	113,817 28
Total amount of cash on hand, not deposited in bank	4,826 70
	\$122,443 98

Liabilities.

Total amount due to depbsitors	\$122,368 98
Excess of assets over all liabilities	75 00
	\$122,443 98

The number of open accounts on the morning of January 1, 1862, was 467.

The total amount deposited during the calendar year 1861, was.....	\$56,456 85
The total amount withdrawn during the calendar year 1861, was	63,657 67
The amount received for interest during the calendar year 1861, was.....	6,853 40
The amount of interest placed to the credit of depositors for the same period, was.....	6,828 40

38. MARINERS' SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$218,618 67
Total amount of stock investments.....	385,830 01
Total amount loaned upon stocks.....	10,340 00
Total amount invested in real estate	25,290 00
Cash on deposit in banks.....	102,421 92
Total amount of cash on hand, not deposited in bank	9,679 06
	\$752,179 66

Liabilities.

Total amount due to depositors	\$731,585 77
Excess of assets over all liabilities	20,593 89
	\$752,179 66

The number of open accounts on the morning of January 1, 1862, was 3,231.

The total amount deposited during the calendar year 1861, was	\$266,779 98
The total amount withdrawn during the calendar year 1861, was	344,789 12
The amount received for interest during the calendar year 1861, was	47,604 48
The amount of interest placed to the credit of depositors for the same period, was	40,789 15

39. MECHANICS' AND FARMERS' SAVINGS BANK, ALBANY.

Resources.

Cash on deposit in banks	\$535,145 39
Total amount of cash on hand, not deposited in bank	7,832 07
	\$542,977 46

Liabilities.

Total amount due to depositors	\$542,977 46

The number of open accounts on the morning of January 1, 1862, was 1,553.

The total amount deposited during the calendar year 1861, was	\$405,031 45
The total amount withdrawn during the calendar year 1861, was	424,616 36
The amount received for interest during the calendar year 1861, was	14,771 46
The amount of interest placed to the credit of depositors for the same period, was	14,771 46

40. MECHANICS' AND TRADERS' SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$146,950 00
Total amount of stock investments.....	292,733 19
Cash on deposit in banks.....	42,718 65
Total amount of cash on hand, not deposited in bank.	3,972 00
Total amount interest due and uncollected.....	15,797 29
Banking property	2,500 00
	\$504,671 13

Liabilities.

Total amount due to depositors	\$452,031 62
Excess of assets over all liabilities.....	52,639 51
	\$504,671 13

The number of open accounts on the morning of January 1, 1862, was 2,475.

The total amount deposited during the calendar year 1861, was.....	\$201,627 12
The total amount withdrawn during the calendar year 1861, was.....	307,750 75
The amount received for interest during the calendar year 1861, was.....	25,786 87
The amount of interest placed to the credit of depositors for the same period, was.....	25,221 67

41. MONROE COUNTY SAVINGS INSTITUTION, ROCHESTER.

Resources.

Total amount of bonds and mortgages	\$351,713 69
Total amount of stock investments.....	33,477 50
Total amount loaned upon stocks.....	62,135 00
Total amount invested in real estate.....	1,789 97
Cash on deposit in banks.....	148,277 62
Total amount of cash on hand not deposited in bank	35,559 41
Total amount loaned or deposited and not included under either of the above heads, being for accrued interest.....	7,578 50
	\$640,531 69

Liabilities.

Total amount due to depositors.....	\$628,777 77
Excess of assets over all liabilities.....	11,753 92
	<u>\$640,531 69</u>

The number of open accounts on the morning of January 1, 1862, was about 1,850.

The total amount deposited during the calendar year 1861, was.....	\$813,009 81
The total amount withdrawn during the calendar year 1861, was	647,212 79
The amount received for interest during the calendar year 1861, was.....	34,984 38
The amount of interest placed to the credit of depositors for the same period, was.....	<u>30,072 90</u>

42. MUTUAL SAVINGS BANK OF TROX, TROY.

Resources.

Cash on deposit in banks.....	<u>\$42,572 71</u>
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Liabilities.

Total amount due to depositors	<u>\$42,572 71</u>
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The number of open accounts on the morning of January 1, 1862, was 240.

The total amount deposited during the calendar year 1861, was.....	\$23,570 87
The total amount withdrawn during the calendar year 1861, was.....	32,318 54
The amount received for interest during the calendar year 1861, was.....	2,438 37
The amount of interest placed to the credit of depositors for the same period, was.....	<u>2,438 37</u>

43. NEWBURGH SAVINGS BANK, NEWBURGH.

Resources.

Total amount of bonds and mortgages	\$130,419 50
Total amount of stock investments	120,631 42

Cash on deposit in banks	\$10,662 77
	\$261,713 69

Liabilities.

Total amount due to depositors	\$250,604 46
Excess of assets over all liabilities	11,109 23
	\$261,713 69

The number of open accounts on the morning of January 1, 1862, was 1,602.

The total amount deposited during the calendar year 1861, was	\$120,369 31
The total amount withdrawn during the calendar year 1861, was	120,156 54
The amount received for interest during the calendar year 1861, was	15,050 81
The amount of interest placed to the credit of depositors for the same period, was	10,062 89

44. NIAGARA COUNTY SAVINGS BANK, LOCKPORT.

Resources.

Cash on deposit in banks	\$3,047 99
Total amount loaned or deposited and not included under either of the above heads	74 18
	\$3,122 17

Liabilities.

Total amount due to depositors	\$2,896 90
Excess of assets over all liabilities	225 27
	\$3,122 17

The number of open accounts on the morning of January 1st, 1862, was 48.

The total amount deposited during the calendar year 1861, was	\$4,433 24
The total amount withdrawn during the calendar year 1861, was	5,395 23

The amount received for interest during the calendar year 1861, was	\$359 61
The amount of interest placed to the credit of depositors for the same period, was	233 41

45. ONONDAGA COUNTY SAVINGS BANK, SYRACUSE.

Resources.

Total amount of bonds and mortgages	\$205,269 64
Total amount of stock investments	50,000 00
Total amount loaned upon personal securities, viz: upon individual bonds, with stocks and bonds of various solvent corporations pledged as collateral	73,725 00
Cash on deposit in banks	93,672 00
Total amount of cash on hand, not deposited in bank	11,181 31
Semi-annual interest on loans, due December 31, 1861, and unpaid	6,474 92
Bank furniture and fixtures	772 42
	\$441,095 29

Liabilities.

Total amount due to depositors	\$438,473 74
Excess of assets over all liabilities	2,621 55
	\$441,095 29

The number of open accounts on the morning of January 1, 1862, was, exclusive of certificates, 1,533.

The total amount deposited during the calendar year 1861, was	\$617,984 97
The total amount withdrawn during the calendar year 1861, was	476,073 70
The amount received for interest during the calendar year 1861, was	20,914 50
The amount of interest placed to the credit of depositors for the same period, was	16,181 05

46. OSWEGO CITY SAVINGS BANK, OSWEGO.

Resources.

Total amount of bond and mortgages	\$10,325 00
Cash on deposit in banks	7,500 00
Total amount of cash on hand not deposited in bank	6,175 81
Total amount loaned or deposited and not included under either of the above heads	2,716 34
City and county orders	13,798 95
Accrued interest on loans	764 99
	\$41,281 09

Liabilities.

Total amount due to depositors	\$40,931 83
Excess of assets over all liabilities	349 26
	\$41,281 09

The number of open accounts on the morning of January 1st, 1862, was 350.

The total amount deposited during the calendar year 1861, was	\$80,235 65
The total amount withdrawn during the calendar year 1861, was	65,693 69
The amount received for interest during the calen- dar year 1861, was	1,929 94
The amount of interest placed to the credit of de- positors for the same period, was	1,232 02

47. PEEKSKILL SAVINGS BANK, PEEKSKILL.

Resources.

Total amount of bonds and mortgages	\$9,150 00
Total amount of stock investments	21,000 00
Cash on deposit in banks	2,402 82
Interest accrued and not received	1,462 82
	\$34,015 14

Liabilities.

Total amount due to depositors.....	\$32,479 42
Excess of assets over all liabilities.....	1,535 72
	\$34,015 14

The number of open accounts on the morning of January 1st, 1862, was 276.

The total amount deposited during the calendar year 1861, was.....	\$20,311 70
The total amount withdrawn during the calendar year 1861, was.....	9,068 95
The amount received for interest during the calendar year 1861, was.....	1,126 65
The amount of interest placed to the credit of depositors for the same period, was.....	1,178 08

48. POUGHKEEPSIE SAVINGS BANK, POUGHKEEPSIE.

Resources.

Total amount of bonds and mortgages.....	\$408,976 24
Total amount of stock investments.....	16,660 00
Total amount invested in real estate.....	5,000 00
Cash on deposit in banks.....	47,738 88
	\$478,375 12

Liabilities.

Total amount due to depositors.....	\$446,118 98
Excess of assets over all liabilities.....	32,256 14
	\$478,375 12

The number of open accounts on the morning of January 1, 1862, was 2,482.

The total amount deposited during the calendar year 1861, was.....	\$160,072 71
The total amount withdrawn during the calendar year 1861, was.....	140,307 26

The amount received for interest during the calendar year 1861, was	\$26,395 25
The amount of interest placed to the credit of depositors for the same period, was.....	18,266 46

49. QUEENS COUNTY SAVINGS BANK, FLUSHING.

Resources.

Total amount of bonds and mortgages	\$7,900 00
Total amount of stock investments.....	19,633 00
Cash on deposit in banks.....	123 54
Total amount of cash on hand, not deposited in bank	625 59
[To make a balance].....	305 25
	\$28,587 38

Liabilities.

Total amount due to depositors	\$28,587 38
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The number of open accounts on the morning of January 1st, 1862, was 712.

The total amount deposited during the calendar year 1861, was.....	\$15,756 47
The total amount withdrawn during the calendar year 1861, was.....	7,966 43
The amount received for interest during the calendar year 1861, was.....	1,465 09
The amount of interest placed to the credit of depositors for the same period, was	1,120 40

50. RHINEBECK SAVINGS BANK, RHINEBECK.

Resources.

Total amount of stock investments	\$4,100 00
Cash on deposit in banks.....	2,786 76
Total amount of cash on hand, not deposited in bank	184 48
Total amount invested in office fixtures, safe, &c..	281 79
	\$7,353 03

Liabilities.

Total amount due to depositors	\$7,047 06
Excess of assets over all liabilities	305 97
	\$7,353 03

The number of open accounts on the morning of January 1st, 1862, was 109.

The total amount deposited during the calendar year 1861, was	\$3,724 15
The total amount withdrawn during the calendar year 1861, was	4,191 10
The amount received for interest during the calendar year 1861, was	366 73
The amount of interest placed to the credit of depositors for the same period, was	231 98

51. ROCHESTER SAVINGS BANK, ROCHESTER.

Resources.

Total amount of bonds and mortgages	\$1,216,301 00
Total amount of stock investments	481,760 00
Total amount invested in real estate, including banking house and lot	119,765 17
Cash on deposit in banks	340,000 00
Total amount of cash on hand, not deposited in bank	19,570 99
Total amount loaned or deposited and not included under either of the above heads, being accrued interest, &c.	42,656 18
	\$2,220,053 34

Liabilities.

Total amount due to depositors	\$2,096,800 15
Excess of assets over all liabilities	123,253 19
	\$2,220,053 34

The number of open accounts on the morning of January 1, 1862, was 6,932.

The total amount deposited during the calendar year 1861, was\$1,113,174 53

The total amount withdrawn during the calendar year 1861, was 1,292,514 00

The amount received for interest during the calendar year 1861, was 134,635 01

The amount of interest placed to the credit of depositors for the same period, was 113,684 07

52. ROCKLAND COUNTY SAVINGS BANK, PIERMONT.

Resources.

Total amount of cash on hand, not deposited in bank\$28 00

The state of public affairs, early last year, arrested the progress of this institution, and about the first of July a large portion of the deposits were withdrawn, and its progress was and continues to be suspended.

Liabilities.

Total amount due to depositors\$28 00

The number of open accounts on the morning of January 1, 1862, was 19.

The total amount withdrawn during the calendar year 1861, was\$26 50

53. ROME SAVINGS BANK.

Resources.

Total amount of bonds and mortgages\$54,513 34

Total amount of stock investments 2,500 00

Total amount loaned upon stocks 1,000 00

Cash on deposit in banks 14,683 61

Total amount loaned or deposited and not included under either of the above heads 2,235 65

\$74,932 60

Liabilities.

Total amount due to depositors	\$69,472 10
Excess of assets over all liabilities	5,460 50
	\$74,932 60

The number of open accounts on the morning of January 1st, 1862, was 333.

The total amount deposited during the calendar year 1861, was	\$41,628 00
The total amount withdrawn during the calendar year 1861, was	33,532 18
The amount received for interest during the calendar year 1861, was	3,744 83
The amount of interest placed to the credit of depositors for the same period, was	2,736 25

54. ROSE HILL SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$32,000 00
Total amount of stock investments	30,299 22
Total amount loaned upon stocks	45,000 00
Cash on deposit in banks	5,126 31
Total amount of cash on hand, not deposited in bank	679 99
Personal property	300 00
Interest accrued on the above loans and investments	2,492 48
	\$115,898 00

Liabilities.

Total amount due to depositors	\$111,285 66
Excess of assets over all liabilities	4,612 34
	\$115,898 00

The number of open accounts on the morning of January 1st, 1862, was 541.

The total amount deposited during the calendar year 1861, was	\$47,999 42
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The total amount withdrawn during the calendar year 1861, was.....	\$61,575 22
The amount received for interest during the calendar year 1861, was.....	6,663 27
The amount of interest placed to the credit of depositors for the same period, was.....	5,841 81

55. SAG HARBOR SAVINGS BANK, SAG HARBOR.

Resources.

Total amount of bonds and mortgages.....	\$20,464 97
Total amount of stock investments.....	14,390 86
Total amount loaned upon personal securities....	2,055 36
Cash on deposit in banks.....	3,421 38
Total amount of cash on hand not deposited in bank	41
Total amount loaned or deposited and not included under either of the above heads.....	1,028 51
	<u>\$41,361 49</u>

Liabilities.

Total amount due to depositors... ..	\$40,503 86
Excess of assets over all liabilities.....	857 63
	<u>\$41,361 49</u>

The number of open accounts on the morning of January 1, 1862, was 429.

The total amount deposited during the calendar year 1861, was.....	\$30,941 92
The total amount withdrawn during the calendar year 1861, was.....	3,925 55
The amount received for interest during the calendar year 1861, was... ..	1,327 51
The amount of interest placed to the credit of depositors for the same period, was.....	767 54

56. SAVINGS BANK OF UTICA, UTICA.

Resources.

Total amount of bonds and mortgages.....	\$401,539 00
Total amount of stock investments.....	50,000 00
Total amount loaned upon personal securities....	1,300 00

Total amount invested in real estate	\$10,352 78
Cash on deposit in banks	96,106 05
Total amount of cash on hand, not deposited in bank	1,347 73
Total amount loaned on Utica city bonds and not included under either of the above heads	28,000 00
Interest accrued to January 1, and not received ..	7,049 05
	\$595,694 61

Liabilities.

Total amount due to depositors	\$565,435 91
Excess of assets over all liabilities	30,258 70
	\$595,694 61

The number of open accounts on the morning of January 1st, 1862, was 2,860.

The total amount deposited during the calendar year 1861, was

\$284,138 08

The total amount withdrawn during the calendar year 1861, was

278,983 17

The amount received for interest during the calendar year 1861, was

32,540 88

The amount of interest placed to the credit of depositors for the same period, was

25,313 70

57. SCHENECTADY SAVINGS BANK, SCHENECTADY.

Resources.

Total amount of bonds and mortgages	\$147,324 94
Total amount of stock investments	30,280 45
Cash on deposit in banks	55,402 88
Total amount of cash on hand, not deposited in bank	101,444 00
	\$334,452 27

Liabilities.

Total amount due to depositors	\$315,940 53
Excess of assets over all liabilities	18,511 74
	\$334,452 27

The number of open accounts on the morning of January 1, 1862, was 1,042.

The total amount deposited during the calendar year 1861, was	\$103,276 35
The total amount withdrawn during the calendar year 1861, was	114,669 94
The amount received for interest during the calendar year 1861, was	17,363 38
The amount of interest placed to the credit of depositors for the same period, was	14,374 39

58. SEAMEN'S BANK FOR SAVINGS, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$3,095,450 00
Total amount of stock investments	4,780,579 61
Total amount invested in real estate	158,421 74
Cash on deposit in banks	499,052 16
Total amount of cash on hand, not deposited in bank	59,921 13
	\$8,593,424 62

Liabilities.

Total amount due to depositors	\$8,215,686 40
Excess of assets over all liabilities	377,738 22
	\$8,593,424 62

The number of open accounts on the morning of January 1, 1862, was 25,861.

The total amount deposited during the calendar year 1861, was	\$2,348,645 21
The total amount withdrawn during the calendar year 1861, was	3,456,774 64
The amount received for interest during the calendar year 1861, was	494,121 48
The amount of interest placed to the credit of depositors for the same period, was	401,181 37

59. SING SING SAVINGS BANK, SING SING.

Resources.

Total amount of bonds and mortgages.....	\$26,700 00
Total amount of stock investments.....	16,000 00
Cash on deposit in banks.....	327 66
Total amount of cash on hand, not deposited in bank	825 41
Total amount loaned or deposited and not included under either of the above heads.....	174 38
	\$44,027 45

Liabilities.

Total amount due to depositors.....	\$42,358 71
Excess of assets over all liabilities.....	1,668 74
	\$44,027 45

The number of open accounts on the morning of January 1, 1862, was 258.

The total amount deposited during the calendar year 1861, was.....	\$9,365 63
The total amount withdrawn during the calendar year 1861, was	22,897 84
The amount received for interest during the calen- dar year 1861, was.....	3,031 50
The amount of interest placed to the credit of de- positors for the same period, was.....	2,007 15

60. SIXPENNY SAVINGS BANK, ALBANY,—(Closing.)

Resources.

Cash on deposit in Bank of the Capitol.....	\$13,614 93

Liabilities.

Total amount due to depositors	\$13,614 93

The number of open accounts on the morning of January 1, 1862, was 1,004.

The total amount deposited during the calendar year 1861, was.....	\$2,833 19
The total amount withdrawn during the calendar year 1861, was.....	4,570 03
The amount received for interest during the calendar year 1861, was	599 59
The amount of interest placed to the credit of depositors for the same period, was.....	599 59

61. SIXPENNY SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages.....	\$123,733 60
Total amount of stock investments.....	14,300 00
Cash on deposit in banks.....	19,196 94
Total amount of cash on hand not deposited in bank	5,636 30
Total amount loaned or deposited and not included under either of the above heads, consisting of accrued interest, rents, &c.....	6,459 82
	\$169,326 66

Liabilities.

Total amount due to depositors.....	\$167,451 18
Excess of assets over all liabilities.....	1,875 48
	\$169,326 66

The number of open accounts on the morning of January 1, 1862, was 8,657.

The total amount deposited during the calendar year 1861, was.....	\$100,413 71
The total amount withdrawn during the calendar year 1861, was.....	117,860 76
The amount received for interest during the calendar year 1861, was.....	10,026 24
The amount of interest placed to the credit of depositors for the same period, was.....	8,575 59

62. SOUTH BROOKLYN SAVINGS INSTITUTION, BROOKLYN.

Resources.

Total amount of bonds and mortgages.....	\$379,600 00
Total amount of stock investments.....	427,275 00
Total amount loaned upon stocks.....	52,000 00
Total amount invested in real estate.....	28,500 00
Cash on deposit in banks.....	30,456 17
Total amount of cash on hand, not deposited in bank	42,687 13
	\$960,518 30

Liabilities.

Total amount due depositors.....	\$920,774 70
Excess of assets over all liabilities.....	39,743 60
	\$960,518 30

The number of open accounts on the morning of January 1st, 1862, was 5,338.

The total amount deposited during the calendar year 1861, was.....	\$404,249 91
The total amount withdrawn during the calendar year 1861, was.....	459,581 26
The amount received for interest during the calendar year 1861, was.....	59,785 20
The amount of interest placed to the credit of depositors for the same period, was.....	47,154 80

63. SOUTHDOLD SAVINGS BANK, SOUTHDOLD.

Resources.

Total amount of bonds and mortgages	\$45,691 00
Total amount of stock investments	6,592 50
Total amount loaned upon personal securities	4,788 66
Total amount of cash on hand, not deposited in bank	6,410 76
Total amount of interest due but not collected...	337 11
Total amount of interest accrued but not due	232 17
	\$64,052 20

Liabilities.

Total amount due to depositors.....	\$63,483 68
Excess of assets over all liabilities.....	568 52
	<u>\$64,052 20</u>

The number of open accounts on the morning of January 1st, 1862, was 348.

The total amount deposited during the calendar year 1861, was	\$49,395 72
The total amount withdrawn during the calendar year 1861, was.....	25,602 70
The amount received for interest during the calendar year 1861, was.....	2,457 54
The amount of interest placed to the credit of depositors for the same period, was.....	<u>2,255 86</u>

64. STATE SAVINGS BANK OF TROY, TROY.

Resources.

Cash on deposit in banks.....	<u>\$85,473 67</u>
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Liabilities.

Total amount due to depositors.....	<u>\$85,473 67</u>
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The number of open accounts on the morning of January 1st, 1862, was 479.

The total amount deposited during the calendar year 1861, was.....	\$37,040 12
The total amount withdrawn during the calendar year 1861, was.....	49,130 61
The amount of interest placed to the credit of depositors for the same period, was.....	<u>4,503 26</u>

65. SYRACUSE SAVINGS INSTITUTION, SYRACUSE.

Resources.

Total amount of bonds and mortgages	\$274,496 00
Total amount of stock investments	50,000 00
Total amount loaned upon stocks	70,255 00
Total amount loaned upon personal securities.....	36,400 00
Cash on deposit in banks.....	<u>100,900 00</u>

Total amount of cash on hand, not deposited in bank	\$9,863 81
Total amount loaned or deposited and not included under either of the above heads, being accrued interest, &c.	15,693 68
	\$557,608 49

Liabilities.

Total amount due to depositors	\$552,722 38
Excess of assets over all liabilities	4,886 11
	\$557,608 49

The number of open accounts on the morning of January 1st, 1862, was 2,630,

The total amount deposited during the calendar year 1861, was	\$570,011 74
The total amount withdrawn during the calendar year 1861, was	470,260 15
The amount received for interest during the calendar year 1861, was	31,135 08
The amount of interest placed to the credit of depositors for the same period, was	26,745 84

66. THIRD AVENUE SAVINGS BANK, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$143,400 08
Total amount of stock investments	151,885 00
Total amount loaned upon stocks	47,433 75
Total amount invested in personal property	1,000 00
Cash on deposit in banks	14,848 46
Total amount of cash on hand, not deposited in bank	10,386 73
	\$368,954 02

Liabilities.

Total amount due to depositors	\$363,826 18
Excess of assets over all liabilities	5,127 84
	\$368,954 02

The number of open accounts on the morning of January 1, 1862, was 1,606.

The total amount deposited during the calendar year 1861, was	\$301,896 78
The total amount withdrawn during the calendar year 1861, was	240,113 73
The amount received for interest during the calendar year 1861, was	20,559 13
The amount of interest placed to the credit of depositors for the same period, was	16,014 27

67. TROY SAVINGS BANK, TROY.

Resources.

Total amount of bonds and mortgages	\$119,930 00
Total amount of stock investments	320,439 11
Total amount invested in real estate	21,400 00
Cash on deposit in banks	341,276 51
Total amount of cash on hand, not deposited in bank	6,158 64
	<u>\$809,204 26</u>

Liabilities.

Total amount due to depositors	\$796,268 62
Excess of assets over all liabilities	12,935 64
	<u>\$809,204 26</u>

The number of open accounts on the morning of January 1, 1862, was 2,985.

The total amount deposited during the calendar year 1861, was	\$239,509 14
The total amount withdrawn during the calendar year 1861, was	287,791 01
The amount received for interest during the calendar year 1861, was	45,700 36
The amount of interest placed to the credit of depositors for the same period, was	40,842 64

68. ULSTER COUNTY SAVINGS INSTITUTION, KINGSTON.

Resources.

Total amount of bonds and mortgages	\$130,762 72
Total amount of stock investments	15,550 00
Total amount loaned upon stocks	10,500 00
Cash on deposit in banks	6,398 54
Total amount loaned or deposited and not included under either of the above heads	18,500 00
Interest accrued from July 1, 1861, to January 1, 1862	6,104 82
Cash advanced to pay interest on Treasury notes ..	49 00
	\$187,865 08

Liabilities.

Total amount due to depositors	\$178,896 73
Interest credited to depositors	4,978 02
Excess of assets over all liabilities	3,990 33
	\$187,865 08

The number of open accounts on the morning of January 1, 1862, was 668.

The total amount deposited during the calendar year 1861, was

\$53,163 18

The total amount withdrawn during the calendar year 1861, was

56,774 79

The amount received for interest during the calendar year 1861, was

12,042 71

The amount of interest placed to the credit of depositors for the same period, was

9,756 21

69. UNION DIME SAVINGS INSTITUTION, NEW YORK.

Resources.

Total amount of bonds and mortgages	\$215,236 00
Total amount of stock investments	60,200 00
Total amount invested in real estate	3,339 15
Cash on deposit in banks	42,043 20
Total amount of cash on hand, not deposited in bank	5,645 97
	\$326,464 32

Liabilities.

Total amount due to depositors	\$320,006 78
Excess of assets over all liabilities	6,457 54
	\$326,464 32

The number of open accounts on the morning of January 1st, 1862, was 4,556.

The total amount deposited during the calendar year 1861, was.....	\$267,263 16
The total amount withdrawn during the calendar year 1861, was.....	201,502 76
The amount received for interest during the calendar year 1861, was.....	22,575 33
The amount of interest placed to the credit of depositors for the same period, was.....	13,327 28

70. UNION SAVINGS BANK, ALBANY.

Resources.

Cash on deposit in banks.....	\$16,065 88
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Liabilities.

Total amount due to depositors.....	\$16,065 88
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The number of open accounts on the morning of January 1st, 1862, was 116.

The total amount deposited during the calendar year 1861, was.....	\$20,951 58
The total amount withdrawn during the calendar year 1861, was.....	50,958 10
The amount received for interest during the calendar year 1861, was.....	1,757 87
The amount of interest placed to the credit of depositors for the same period, was.....	1,757 87

71. WESTCHESTER COUNTY SAVINGS BANK, TARRYTOWN.

Resources.

Total amount of bonds and mortgages	\$115,722 34
Total amount of stock investments	55,646 34
Total amount loaned upon stocks.....	8,820 00
Cash on deposit in banks.....	6,759 89
Total amount of cash on hand, not deposited in bank	277 12
Total amount loaned or deposited and not included under either of the above heads, on the hypothecation of mortgages.....	598 93
	<u>\$187,824 62</u>

Liabilities.

Total amount due to depositors	\$181,779 24
Excess of assets over all liabilities	6,045 38
	<u>\$187,824 62</u>

The number of open accounts on the morning of January 1st, 1862, was 935.

The total amount deposited during the calendar year 1861, was	\$82,172 34
The total amount withdrawn during the calendar year 1861, was	107,476 24
The amount received for interest during the calendar year 1861, was	13,210 08
The amount of interest placed to the credit of depositors for the same period, was	9,331 34

72. WESTERN SAVINGS BANK OF BUFFALO, BUFFALO.

Resources.

Total amount of bonds and mortgages	\$76,340 17
Total amount of stock investments	20,783 35
Total amount invested in real estate	5,573 20
Cash on deposit in banks	57,514 39
Total amount of cash on hand, not deposited in bank	5,691 36
Interest due, unpaid	949 78
	<u>\$166,852 25</u>

Liabilities.

Total amount due to depositors	<u>\$166,852 25</u>
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The number of open accounts on the morning of January 1st, 1862, was 658.

The total amount deposited during the calendar year 1861, was	\$325,535 86
The total amount withdrawn during the calendar year 1861, was	296,658 90
The amount received for interest during the calendar year 1861, was	9,038 69
The amount of interest placed to the credit of depositors for the same period, was	7,300 91

73. WILLIAMSBURGH SAVINGS BANK, BROOKLYN.

Resources.

Total amount of bonds and mortgages	\$806,412 11
Total amount of stock investments	941,619 11
Total amount loaned upon stocks	123,830 00
Total amount invested in real estate	34,840 40
Cash on deposit in banks	74,082 77
Total amount of cash on hand, not deposited in bank	26,512 73
	<u>\$2,007,297 12</u>

Liabilities.

Total amount due to depositors	\$1,916,041 04
Excess of assets over all liabilities	91,256 08
	\$2,007,297 12

The number of open accounts on the morning of January 1, 1862, was 10,287.

The total amount deposited during the calendar year 1861, was	\$836,056 40
The total amount withdrawn during the calendar year 1861, was	925,274 75
The amount received for interest during the calendar year 1861, was	123,882 40
The amount of interest placed to the credit of depositors for the same period, was	99,497 81

74. YONKERS SAVINGS BANK, YONKERS.

Resources.

Total amount of bonds and mortgages	\$62,700 00
Total amount of stock investments	12,000 00
Cash on deposit in banks	4,441 71
Total amount of cash on hand, not deposited in bank	1,460 33
Interest due but not paid	386 25
Interest accrued but not due	715 75
	\$81,704 04

Liabilities.

Total amount due to depositors	\$78,342 58
Excess of assets over all liabilities	3,361 46
	\$81,704 04

The number of open accounts on the morning of January 1, 1862, was 578.

The total amount deposited during the calendar year 1861, was	\$31,043 39
The total amount withdrawn during the calendar year 1861, was	38,360 83
The amount received for interest during the calendar year 1861, was	4,735 04
The amount of interest placed to the credit of depositors for the same period, was	3,551 80

State of New York.

No. 81.

IN SENATE,

March 29, 1862.

GENERAL ORDERS.

323. (Assembly, No. 109.) An act to incorporate the Knickerbocker Fire Engine Company No. one, at Rockland lake, in the town of Clarkstown, in the county of Rockland, and State of New York.
324. (Assembly, No. 104.) An act to amend an act entitled "An act to incorporate the Conqueror Hook and Ladder and Bucket Company, at Tarrytown, Westchester county," passed April 10, 1860.
325. (Assembly, No. 78.) An act to authorize the county of Westchester to acquire land for the construction of the Harlem bridge, pursuant to an act passed April 10, 1861, and the appointment of commissioners therefor.
326. (Assembly, No. 135.) An act to amend an act entitled "An act to amend an act entitled 'An act to authorize the formation of corporations for manufacturing, mining, mechanical or chemical purposes,'" passed April 13, 1854.
327. An act to authorize the construction of a bridge over the Allegany river, on the Indian Reservation, in the town of Carolton, in the county of Cattaraugus.
328. (Assembly, No. 72.) An act to incorporate the Brooklyn Pharmaceutical Society, of the city of Brooklyn.
329. (Assembly, No. 79.) An act to authorize the towns of Manheim, Danube and Little Falls, in the county of Herkimer, to build a bridge across the Mohawk river, at a place called Fink's, at the foot of Fall hill, in the town of Danube.

330. (Assembly, No. 122.) An act to amend an act entitled "An act to amend the Revised Statutes, in relation to laying out public road, and the alteration thereof, in the towns of North Castle, Bedford, and Lewisboro, in the county of Westchester," passed April 12, 1859.
331. (Assembly, No. 97.) An act to amend an act entitled "An act to incorporate the Cayuga and Seneca Road and Bridge Company," passed April 18, 1843.
332. (Assembly, No. 102.) An act in relation to non-resident highway taxes upon certain lands in the county of Hamilton, and to provide for laying out and constructing a public highway in said county.
333. (Assembly, No. 90.) An act enabling the Tompkins County Agricultural and Horticultural Society to draw their proportion of the moneys devoted to agricultural purposes from the State treasury.
334. (Assembly, No. 91.) An act to regulate the size of apple barrels.
335. (Assembly, No. 180.) An act to authorize the election of three superintendents of the poor in the county of Genesee.
336. (Assembly, No. 107.) An act to extend the time of collecting moneys for town purposes, in the towns of Suffolk county.
337. An act to facilitate the closing up of insolvent and dissolved mutual insurance companies.
338. (Assembly, No. 347.) An act to correct an error in the assessment of taxes in the city of Brooklyn.
339. (Assembly, No. 64.) An act to amend an act entitled "An act in relation to the auditing of accounts by the board of supervisors of Onondaga and other counties, and the duties of certain officers in said counties," passed March 26, 1861.
340. (Assembly, No. 80.) An act to authorize the trustees of the village of Elmira, Chemung, to erect a bridge over the Chemung canal, in said village.
341. An act to incorporate the Brooklyn Mutual Loan and Improvement Company.
342. An act to alter and amend an act entitled "An act to authorize the appointment of commissioners to take the proof and acknowledgment of deeds, and other instru-

ments, and to administer oaths in Great Britain and France.

343. (Assembly, No. 173.) An act releasing the interest of the State in certain surplus moneys, to Frederick Krutina.
344. (Assembly, No. 101.) An act to repeal certain sections of chapter 230, of the Laws of 1843.
345. (Assembly, No. 142.) An act to release the interest of the people of this State in certain land whereof John Johnstown died seized, to John Johnson and James Johnson.
346. (Assembly, No. 86.) To empower St. Patrick's Lodge No. 4, of Free and Accepted Masons, in the village of Johnson, to take, hold and convey real estate and personal property.
347. (Assembly, No. 343.) An act to release the interest which the State of New York may have acquired to the real estate of which Joseph Laville died seized, to his widow, Catharine Laville.
348. (Assembly, No. 183.) An act to authorize Josephine Bargagli to take, hold and convey real estate.
349. (Assembly, No. 171.) An act to authorize the county court or court of sessions of the county of Steuben to make an order, declaring Seymour S. Wood innocent of the crime of which he was convicted on the 11th day of June, 1842; and to provide that the record of his conviction shall not be used as evidence in the courts.
350. (Assembly, No. 182.) An act for the relief of Susan Caldwell.
351. (Assembly, No. 110.) An act to amend the Revised Statutes, in relation to taking the testimony of witnesses out of the State.
352. (Assembly, No. 162.) An act to authorize clerks of boards of excise to take affidavits and acknowledgments in certain cases.
353. (Assembly, No. 160.) An act to amend sections first and second, title second, chapter 10, of part third of the Revised Statutes, and section three of chapter 390, of the Laws of 1847.
354. (Assembly, No. 175.) An act to provide for the election of a police constable in the village of Silver Creek.
355. An act to amend an act to increase the number of firemen in the village of Rhinebeck, passed February 6, 1840.

State of New York.

No. 82.

IN SENATE,

March 22, 1862.

SUPPLEMENTAL REPORT

OF THE SELECT COMMITTEE APPOINTED AT THE LAST SESSION OF THE SENATE, CONSISTING OF MESSRS. GRANT, P. P. MURPHY, AND MUNROE, TO INVESTIGATE CERTAIN CHARGES AGAINST THE NEW YORK HARBOR MASTERS.

SATURDAY, *June 8, 1861.*

The committee devoted the day to an examination of the harbor masters' districts, more particularly the slips and piers in what is called the "Canal district."

MONDAY, *June 10, 1861.*

Present—The committee, Hon. R. Y. Grant, chairman; Hon. P. P. Murphy, Hon. Allen Munroe.

John R. James, called and sworn: Am ship watchman; know Harbor Master Benedict; I have paid him money; about one year ago paid him \$20. I went up into the district for a berth; found C. Raymond, Benedict's deputy, and asked for a berth for ship Constellation. He asked me how far she would "stick out." I knew what he meant, and said it might be a foot, or it might be twenty feet. When I paid the \$20 to Mr. Benedict, we had no conversation; Mr. C. Carow furnished me the money. What I understood by "sticking out," is that every foot is a dollar, and we understand the term. I was told by Mr. Carow afterwards, that the money was refunded. The day after I paid the money to Benedict, I made an affidavit of the fact, and it was given to Capt. Hall.

William S. Chamberlain, called and sworn: I am engaged in the Mediterranean trade at No. 103 Front street; I am having vessels arrive, loading and unloading at this port; the goods being of a perishable nature, we take a berth where we can find one. We have made application frequently to harbor masters for berths; we have not been required within the past two years, directly or indirectly, to pay for such berths; we have voluntarily made little presents of fruit occasionally—a box of oranges or raisins—but we do not consider it a bribe. We have paid money sometimes to the dock master. We do not know that we have paid money to the stevedores or other persons, to procure berths for our vessels. I do not think that there has been checks given by our house to the harbor masters, nor do I know that there has not, but I do not believe there has. I do not know of having dealt with the harbor masters; I have done the business of obtaining berths for vessels, but not all of it; I do not know of stevedores being paid money for us; I have heard no complaints by our firm of paying money to harbor masters; we have paid money to one or more dock masters for berths; it was between pier 1 and pier 7, East river; I do not know whether they were authorised to collect money, but know that they got us the berths; we paid from \$5 to \$15; this amount was in addition to the fees; I suppose that they were lessees of the piers. This was in what is called the "Canal district." We always apply to the harbor master. He tells us that he has no place empty. We find that there is a vacant berth *not under his control*. I am not aware that the harbor master has control over all the berths. I know that a district is set apart to canal boats. I was not aware that by so doing we were keeping canal boats out, or that we were interfering with any one's rights. We only paid small sums, from \$5 to \$15, to dock masters, and only in a few instances. It was represented to us that the piers were leased; that the harbor masters had no control over these berths. I do not know who is harbor master from pier 4 to pier 8, East river. The dock masters, acting as agents of the owners or lessees of these piers, I understood to have the control of the matter. I learned, indirectly, from them, that we could have the use of the piers for the small consideration. These were not in but few instances. I know Harbor Master Murray. I do not know whether my firm has given him a check for any purpose.

Jared V. Peck, called and sworn: I am port warden, and have held the office two years from the 17th of April, 1859; I have no district, but am detailed to other duties; I have heard that harbor masters had fees outside of their legal fees, but had no personal knowledge of the fact. Cases of complaint come under my observation, and I heard the remark made, that it was of frequent occurrence; I have heard one or two captains say so; I have no personal knowledge of any such action on the part of harbor masters. My duties are to examine the cargoes of vessels, to see that they are properly stored; to attend auction sales of damaged goods, and see that they are properly showed or exhibited; to see about vessels in distress. I have no personal knowledge of payments to harbor masters outside of their legal fees. I am satisfied that merchants stand in the attitude of tempters to harbor masters to grant favors to merchants. It is often important for merchants to have these berths, and they are often anxious to have harbor masters accept a large sum for giving berths to their vessels. I have heard a harbor master state that money had been so offered him, but that he declined it; \$300 was offered. Money was offered as a present to a member of his family.

Edward Butler, called and sworn: I am a stevedore, in the employ of Chamberlain, Phelps & Co., and E. H. Sanford and others. Sometimes I procure docks for the firms; I did so last week. I have not made application to harbor masters within two years for slips, but made it to the lessees. I have never made an agreement with harbor masters for slips. Captains have told me to do what was necessary, and they would do what was right. Vessels engaged in foreign trade are permitted in the canal district, at the end of the piers. When the captain promised to do what was right, I would tell it to the parties with whom I had to deal. I do not understand the language used along the docks. I have been there nine years. I do not know what "stick out" means.

TUESDAY, *June 11*, 1861.

Present—The Committee.

Henry Bremer, called and sworn: Am a stevedore; engaged for Hargous & Brothers, Ponworth & Co.; have been employed for those houses twenty-four years; business principally is between piers 8 and 12 East river, formerly Mr. Murray's district; generally attend to getting berths for vessels for these firms, and

if slips are occupied, wait until we have a chance; paid a Mr. Kipp \$2, at one time some years since, for berthing a vessel; he said he paid the amount for towing the ship. I have heard that amounts as large as \$200, was paid for berthing a vessel; I have not paid a cent within two years past; I have no knowledge by which I am led to believe that the firms for which I am employed or any in their employ, have paid anything for berthing vessels. The firms would not allow anything of the kind. I have attended to loading and discharging all the cargoes of vessels of these firms; they are never in a hurry; small vessels; go to Vera Cruz; bring back specie, hides and cochineal; nothing that suffers from delay in unloading.

The following letter and accompanying papers was received from the Comptroller of the city of New York:

CITY OF NEW YORK: DEPARTMENT OF FINANCE, }
COMPTROLLER'S OFFICE, *June 10, 1861.* }

GENTLEMEN—I herewith enclose a statement showing the names of lessees of piers from Nos. 1 to 9, East river, where owned by the corporation, with the date of the lease, its time of expiration, and the amount of rent; also a blank of the form of the lease. From examination of the proceedings of the Common Council, I am unable to find that any action has been had giving to the lessees the right to appropriate these piers to specific or exclusive purposes.

I am, very respectfully,

Your obedient, &c.,

ROBERT T. HAWS,

Comptroller.

HON. R. Y. GRANT, P. P. MURPHY, ALLEN MUNROE,

Select Committee of Senate, &c.

Lessees of Piers on East River, from No. 1 to No. 9.

	Lease expires.	Annual rent.
Pier 1—United States.....		
Bulkhead between 1 & 2—Union Ferry Company.....		
One-half of 2, all of 3, and half of 4, by private owners.		
Half each of 4 and 5—John H. Redfield, May 1, 1863.		\$2,200 00

	Lease expires.	Annual rent.
Half each of 5 and 6—Peter E. Boeman, for "Albany Canal Line,"-----	May 1, 1863.	\$4,200 00
Half each of 6 and 7—American Trans- portation Company,-----	do	4,600 00
Half each of 7 and 8—Western Trans- portation Company,-----	do	5,100 00
One-half of 8, all of 9 and 10, by pri- vate owners.		

Whereas, The Legislature of the State of New York have, by various acts by them passed, enacted, that it shall be lawful for the owners of wharves in the city of New York, to ask and receive to their own use certain rates of wharfage; and have also directed the manner in which the same may or shall be collected: *And whereas*, the mayor, aldermen and commonalty of the city of New York, are owners of several wharves, slips, piers or bulkheads, in the city of New York, and are entitled to collect and receive the wharfage and slippage thereof, and have agreed for the consideration and on the conditions hereinafter mentioned, to sell and assign their right to the collection of wharfage at some of them, unto

for the term of year from the first day of May next:

Now, therefore, THIS INDENTURE, made this day of in the year one thousand eight hundred and fifty between the mayor, aldermen and commonalty of the city of New York, of the first part, and of the second part, *Witnesseth*, That the said parties of the first part, for and in consideration of the rents, covenants and agreements hereinafter mentioned and contained, on the part and behalf of the said part of the second part, heirs, executors, administrators and assigns, to be paid, done, kept and performed, have granted, bargained, sold and assigned unto the said part of the second part, heirs and assigns, all and singular the wharfage which shall or may arise, accrue or become due, between the first day of May, and the first day of May, for the use or occupation by vessels of more than five tons burthen of any of the wharves, slips, piers or bulkheads, belonging to the said parties of the first part in the river, or of, in or to which they are entitled to receive and col-

lect the wharfage and slippage thereof

excepting all such docks, wharves, piers and slips, as are otherwise leased by the said parties of the first part, or used for ferry purposes. In addition to the consideration herein named, the part of the second part agrees to pay to the said parties of the first part ten per cent. per annum during the said term, on the amount of all expenses incurred by them in extending the said premises hereby leased. And the part of the second part further covenant that during the continuance of said lease will repair and keep the said wharves, piers or bulkheads in good repair at own proper costs and charges, and surrender the same at the expiration of said term in as good condition as they are at the time they take possession thereof, the natural wear and decay excepted.

And the said parties of the first part hereby authorize and empower the said part of the second part, so far as such authority can be conferred by the said parties of the first part, to ask, demand, sue for, levy, recover and receive, in the name, to the use, and at the expense of the said part of the second part, or assigns, such wharfage as may, during the continuance of these presents, arise, accrue or become due, from the master or owner, factor or agent of any vessel of more than five tons burthen, which shall, during the continuance hereof, come to, lie at, or use, any of the said wharves, slips, piers or bulkheads, herein before mentioned.

And it is hereby expressly understood and agreed, by and between the parties to these presents, that the said parties of the first part, or their successors, may at any time during the continuance of these presents, set apart for their use any or all such wharves, docks, piers or slips, herein before mentioned, as they, the said parties of the first part may, during the time last mentioned, require.

It shall be the duty of the comptroller of the city of New York, or the person for the time being lawfully administering the office of comptroller, to notify the said part of the second part, or assigns, in writing, when any part of the said premises is to be taken by the said parties of the first part, or their successors, and from the time of the service of such notice, the right to the part of the said premises so required by the said parties

of the first part, or their successors, shall vest in them for all purposes. But in every such case, it shall be the right of the said part of the second part, or assigns, to have an equitable deduction for the future, made from the rate of rent in this lease reserved, to be ascertained and settled by the comptroller of the city of New York, or the person for the time being lawfully administering the office of comptroller; and the rent to be thereafter paid by the said part of the second part, or assigns, shall be the balance remaining after the deduction so made as aforesaid.

And it is hereby expressly understood and agreed, by and between the parties to these presents, that all wharfage is to be charged according to the laws of the State, and of the common council of the city of New York, as they may be passed from time to time, and by which laws the said part of the second part to be governed, and this lease and its conditions are to be subject; and that no wharfage is to be charged or demanded for Hell Gate or Sound pilot boats, nor for boats belonging to the ships of war of the United States, or foreign nations, or to the United States Navy Yard or garrisons, nor for street manure or coal-ash boats; and further, that no demand shall be made, nor any compensation received for the occupation of the top or surface of any of the public wharves or piers for any purpose whatever. And the said part of the second part, for heirs, executors, administrators or assigns, do further covenant and agree to and with the said parties of the first part, their successors and assigns, that if the said part of the second part, executors and administrators, shall and do at any time during the said term, in any manner, either directly or indirectly, grant, assign, transfer and set over this indenture, or any part of the rights and privileges hereby demised, to any person or persons whomsoever, or encumber or charge the same, without the leave and consent of the said parties of the first part, or their successors, first had and obtained in writing, under their common seal, then and in that case this indenture and every thing herein contained, shall cease, determine, and be utterly null and void, anything therein contained to the contrary notwithstanding. And, also, that the said part of the second part, executors, administrators and assigns, shall and will at all times during the said term, faithfully and diligently observe, conform to, perform and keep, all and singular

the laws and ordinances which the said parties of the first part have made or passed, or shall hereafter make or pass, relative to the docks, wharves, piers or slips, of the said city, and the lying of ships, vessels or small craft therein, so far as relates to the above premises. And further, that the said parties of the first part reserve to themselves the right to build such new piers and bulkheads, and to fill in behind the same, and to repair and cleanse such of the wharves, piers, docks and slips, and to designate such places as may be occupied by steamboats, as they may think proper, without claim for deduction of rent or damage whatever, on the part of the said part of the second part, or those claiming under on any such account. And it is hereby declared by the parties to these presents, that no deduction shall be made from such rent for or on account of any repairs done said wharves, piers or bulkheads, sickness prevailing in said city, or any other occurrence whatever, which may happen during the continuance of this agreement, except as herein before stated. And further, that nothing herein contained shall be construed to interfere in any respect, with the lease made or to be made of the wharfage of boats or vessels not exceeding five tons burthen, the wharfage of which is separately leased as the small boat district.

And the said part of the second part, for heirs, executors, administrators and assigns, hereby expressly covenant and agree that will, during the continuance hereof, keep the wharves in good condition and safe and proper repair, including especially the string pieces and other superficial portions thereof, for safe usage, and in default of their so doing at any time after notice from the comptroller or other proper officer of the city, that such repairs are necessary, and ten days thereafter the said parties of the first part may repair the same, and the said part of the second part heirs, executors, administrators and assigns, agree to pay to the parties of the first part all expenses of such repairs and interest, damage by the elements alone excepted.

And the said part of the second part, for heirs, executors, administrators and assigns, hereby covenant and agree that will pay, or cause to be paid, unto the parties of the first part, their successors or assigns, as consideration and rent for the premises aforesaid, and the right to collect wharfage, herein before assigned, the sum of

dollars, lawful money of the United States, during the said term, in four equal quarterly payments, that is to say, on the first days of August, November, February, and May; the first payment to be made on the first day of August next: *Provided always*, that if the said yearly rent, or sum of money aforesaid, or any part thereof, shall be behind or unpaid for the space of ten days after any day of payment on which the same ought to be paid, as aforesaid, or if the said part of the second part, executors, administrators and assigns, shall neglect or omit to pay, do, perform, fulfill and keep, any or either of the covenants, articles, clauses, agreements, matters or things herein contained, which on the part and behalf of the said part of the second part, executors, administrators and assigns, are to be paid, done, performed, fulfilled and kept, during the term aforesaid, according to the true intent and meaning of these presents; then and from thenceforth, the assignment of the right to collect wharfage herein before made, and every thing therein contained, shall be utterly null and void, so far as it relates to the right to collect and retain the wharfage, at the before mentioned docks, wharves, piers and slips, by the said part of the second part, executors, administrators and assigns.

And the said part of the second part, for heirs, executors, administrators and assigns, hereby expressly covenant and agree that in such case, it shall and may be lawful for the comptroller of the city of New York, or the person who may lawfully administer the office of comptroller of said city, to cause a notice in writing, under his hand and seal, to be served on the said part of the second part, heirs or assigns, declaring that the assignment hereinbefore made is utterly null and void; and that the service of such notice shall be conclusive evidence that the said part of the second part, heirs or assigns, have failed to fulfill, perform and keep, the covenants, clauses and agreements, herein contained, to be fulfilled, performed and kept, by the said part of the second part, heirs or assigns, and that then and in such case, the said parties of the first part shall have again, re-possess and enjoy the same, as in their former estate, in like manner as if these presents had never been made, anything herein contained to the contrary notwithstanding. And that in such case the said part of the second part, or assigns, shall be liable to pay to the said parties of the first part, their successors or assigns, not only the

amount of rent due under these presents, at the time when such notice is given by the comptroller or acting comptroller, but also, the difference or deficit that may hereafter exist between the amount payable as rent at any future day, under these presents, and the amount of wharfage collected for the said parties of the first part, their successors or assigns, under the power hereby reserved, after the notice last mentioned, for the premises herein first described, less the necessary expenses of collecting such wharfage.

And the said part of the second part, for heirs, executors, administrators and assigns, do covenant, promise and agree, to and with the said parties of the first part, their successors and assigns, that the said part of the second part, executors, administrators and assigns, shall and will, during the term hereby demised, well and truly pay or cause to be paid, unto the said parties of the first part, their successors and assigns, the said yearly rent, hereinbefore mentioned, on the days and times limited for the payment thereof, without any manner of deduction, abatement or delay whatsoever.

And also, that the said part of the second part, executors, administrators and assigns, shall and will, well and truly, on the last day of the term hereby demised, or other sooner determination thereof, surrender and yield up the said rights and privileges hereby demised, with all and singular the rights, members, privileges and appurtenances thereto belonging, into the hands and possession of the said parties of the first part, their successors or assigns, without fraud or delay.

In witness whereof, to one part of these presents, remaining with the said parties of the first part, the said part of the second part ha set hand and seal and to the other part thereof, remaining with the said part of the second part, the said parties of the first part have caused the common seal of the city of New York to be affixed, the day and year first above written.

After which the committee adjourned.

The following papers were presented by Harbor Master
MASTEN:

CITY AND COUNTY OF NEW YORK, ss.

I, Richard Heather, of the said city, being duly sworn, say: That I am a coal merchant therein; that in the fore part of the month of October, 1860, at the said city, I became personally acquainted with William Masten, one of the harbor masters of the port of New York, and now know him well; that previous to October aforesaid, I had no acquaintance with him, did not know him by sight, nor had I, previous to said October, ever seen him, said Masten, to my knowledge or belief. That the conversation and arrangements had by me in regard to \$3 and \$2, for large and small boats, and afterwards \$2 and \$1, for the same class of boats, were with some person other than said Masten, as deponent discovered and knew upon becoming acquainted with said Masten as aforesaid. That at the time of such conversations and arrangements in regard to said boats or vessels, I supposed from said person assuming to direct about vessels, &c., within the district under the charge of said Masten, that I was dealing with said Masten himself, and did not discover my mistake until I came to see and know said Masten as aforesaid; and I have no reason to know or believe, nor do I know or believe that said Masten had any knowledge or intimation as to said conversations or arrangements. That since I have become acquainted with said Masten, I have found him to be in every respect, correct and regular in all his transactions, and deponent has no knowledge or belief of his ever having been otherwise. Nor has said Masten at any time, to the knowledge and belief of this deponent, demanded or accepted any illegal or improper fees as harbor master, or known of the same being done by any other person or persons within his district, either by demanding or receiving compensation for berths of vessels, or otherwise.

(Signed,)

RICHARD HEATHER.

Sworn to before me, this 20th }
day of December, 1860, }

JOHN C. PERRY, *Notary Public.*

CITY AND COUNTY OF NEW YORK, ss.

Peter Hammond, of Jersey City, being duly sworn, says: That he has his place of business at number 43 West street, in the city of New York, and is engaged in towing vessels in and about the

harbor of New York, and to and from said port. That he is personally well acquainted with William Masten, one of the harbor masters of said port, and he has been so acquainted since about March, 1860. That said Masten has at all times been correct and regular in all his transactions as such harbor master, to the best of this deponent's knowledge and belief. That he, this deponent, has no knowledge or belief, that said Masten or any person in his behalf, or with his knowledge, has received or demanded any illegal or improper fees, either by way of compensation for berths of vessels or otherwise. That during considerable portion of the past season, one Augustus Van Ness was in the employ of this deponent, and until discharged by this deponent, as stated in the annexed affidavit of said Masten. That deponent was not aware that said Van Ness was receiving or demanding money for berths of vessels, until informed by said Masten; on account of which deponent discharged said Van Ness as aforesaid. That said Masten had no connection or understanding with said Van Ness, and nothing to do with his business in and about said district, or his employment or discharge, except as aforesaid, to the knowledge or belief of this deponent.

(Signed,)

P. HAMMOND.

Sworn to before me, this 20th }
day of December, 1860, }

JOHN C. PERRY, *Notary Public*.

ULSTER COUNTY, ss.

William Masten, of the city of New York, being duly sworn, says: That he is one of the harbor masters of the port of New York. That at or about the time deponent was appointed to said office, a friend of Edward Hope applied to deponent to employ said Hope to work deponent's district; to which deponent answered that he must try to get along alone, as he did not feel able to hire any one to assist him; to which Mr. Hope's friend replied, that it would not cost any thing to employ Hope, but on the contrary, Hope would work the district for nothing and make money for deponent besides. Deponent then said he did not understand how a man could work for nothing and find himself, and that he, deponent, intended to get along alone if he could. That upon deponent's taking his place as harbor master, said Hope, who resides in said city of New York, applied to deponent in person, and made the same overtures to deponent that had before been made in his behalf, as above stated; and offered not

only to work deponent's district for nothing, but also to give deponent one-half of all he, said Hope, could make in said district. That deponent reiterated what he had before stated to said Hope's friend, and plainly told said Hope that he, deponent, would not have any such proceedings within the district. That notwithstanding all this, said Hope still continued about deponent's district, and would enter the names of vessels for berths upon the slate kept by deponent in his office for that purpose; and deponent at first supposing it was all right, gave berths to vessels so entered by said Hope. Deponent was, however, very soon informed that said Hope was extorting money from vessel men under pretence of giving them berths; upon hearing which deponent at once disregarded the entries made by said Hope, and at the first opportunity informed said Hope, that he, said Hope, must keep away from his, deponent's, district, and that no attention whatever would thereafter be paid to any entries for berths made by said Hope. Whereupon said Hope became incensed against deponent, and has ever since sought to defame and injure deponent.

And this deponent further saith, that Augustus Van Ness, mentioned in the accompanying papers, was in the employ of one Peter Hammond, the owner of steam tugs used for towing vessels out and in, and not of this deponent. That deponent never knew or had any suspicion that said Van Ness was receiving or demanding money from vessel men, under pretence of furnishing them with berths, until about the time that deponent understood efforts were being made to procure indictments against deponent for money received by said Van Ness. That as soon as deponent ascertained that said Van Ness was asking and receiving money on account of berths for vessels, deponent immediately informed said Hammond, and requested the discharge of said Van Ness; and said Hammond at once, in pursuance of deponent's said request, discharged said Van Ness from his, said Hammond's, employ; and said Van Ness has not since had any thing to do with vessels in or about deponent's said district, to the knowledge or belief of deponent.

And this deponent further saith, that at the time John M. Precht applied to this deponent in regard to the Bremen ship Charles, he, this deponent, had been absent at Kingston, N. Y., for one or two days, and deponent in reply to an enquiry by Precht, if there was a berth for the ship Charles, replied to Precht

that deponent could not give an answer until he could ascertain the condition of the docks; but deponent did not refer said Precht to Augustus Van Ness, or in any way or manner mention or allude to said Van Ness; and deponent has not, at any time, informed said Precht, or in any way given him to understand that said Van Ness was a clerk or assistant of deponent, or in any way or manner authorised to act for or in behalf of deponent.

WILLIAM MASTEN.

Sworn to before me, this 24th }
day of December, 1860, }

RICHARD W. TAPPEN, *Justice of the Peace.*

STATE OF NEW YORK: }
CITY AND COUNTY OF NEW YORK, } ss.

William Masten, one of the harbor masters of the port of New York, being duly sworn, doth depose and say: That he has not engaged, employed, or in any way authorised Augustus Van Ness to act as his deputy as harbor master; that he never knew that the said Van Ness had at any time, or in any case, acted, or pretended to act, as deputy harbor master, or professed or held himself out as such deputy; that deponent never knew, until he was told, that an attempt was on foot to procure an indictment against him, or that the said Van Ness received money or any other thing for services performed or acts done by him, as such pretended deputy harbor master; and that this deponent never received from the said Van Ness, any money or thing, or any part or share of any money or other thing whatsoever, received by the said Van Ness for fees or compensation as pretended deputy harbor master, and that if the said Van Ness ever assumed or pretended to act as deputy harbor master, or to receive money or compensation in any way for his services, as such pretended harbor master, it was without the authority, knowledge, consent, privity or procurement of this deponent. This deponent further says, that he has never demanded or received from any person or persons whatever, any money, fees, or compensation for the performance of his duties as harbor master, except such as he is expressly authorised by law to demand and receive for such services, and that the statements and charges contained in the affidavits upon which it is alleged in the public newspapers the indictments against this deponent have been found, so far as the same allege that this deponent has received illegal fees or compensation as harbor master, or that he has authorised or employed

the said Van Ness to receive such illegal fees or compensation, are totally false and unfounded.

WILLIAM MASTEN.

Sworn to before me, this 1st }
day of October, 1860, }

JNO. AHERN, *Commissioner of Deeds.*

STATE OF NEW YORK: }
CITY AND COUNTY OF NEW YORK, } ss.

Augustus Van Ness, being duly sworn, doth depose and say : That he is a clerk for Capt. Hammond, one of the owners of and agent for the steamtugs Satellite, Saturn and Frank; that his business as such clerk, is to procure employment for the said tugboats, and to collect the charges for services in towing vessels, and to attend, generally, to their business; that the office of the said boats, and the place at which their business is principally conducted, is at No. 43 West street; that the office of William Masten, the harbor master of the port assigned to the district extending from pier No. 1, North river, to pier No. 7, both inclusive, is in the same building; that in his employment as clerk for the business of said tugboats, he constantly has business with the owners, consignees or captains of vessels procuring berths, or lying at the said piers; that he is acquainted with the management of vessels, and is familiar with the mode of hauling them in and out of their berths, or the slips or docks of the said district; that he has been and is almost daily employed by the owners, consignees, or captains of vessels, to superintend or manage the hauling of vessels in the said district; that in such cases he has invariably taken and followed the direction and order of the said harbor master; but invariably in such cases he has acted as the servant or agent of the owners of the vessels; that as this deponent presumes, from his acquaintance with the said harbor master, and from the fact that his office was in the same building with the office of the tugboats, this deponent is often solicited to procure berths for vessels, or to change their berths in the said district; that he has been offered and has been paid money for those purposes, but that he has never received such money as deputy harbor master, or with the authority, knowledge, or privity of the said William Masten; that the berths assigned to such vessels have been so assigned by the said Masten, and that whenever compensation has been received by this deponent, such compensation has been for deponent's services in the business, as

the agent of other parties. This deponent further says, that he has never been authorised by the said William Masten, to act as his deputy; he further says, that he has never paid to or shared, directly or indirectly, with the said William Masten, any money or other thing, whatsoever, received by him; and that he has no knowledge, and does not believe, that the said William Masten ever knew that he had received such money. This deponent further says, that it is not true that he has ever stated or testified that he had demanded fees, or had received fees for his services as deputy to Masten; that this deponent never received such compensation as was paid to him, as aforesaid, as fees, as deputy harbor master, but in all cases such compensation was voluntarily paid to him for such services as he rendered to the parties who employed him. This deponent further says, that he was never in any way connected with the said William Masten in respect to the discharge of his duties or his fees as harbor master, and that he was never concerned in and never knew of a case or transaction in which the said William Masten, directly or indirectly, demanded or received illegal fees from the owner, consignee, or captain of any vessel of the said district, or from any person connected with such vessels. That such money or compensation as deponent has received he has retained entirely and exclusively to himself, and has never, in any case, stated or insinuated to the said Masten, that he had received the same.

A. VAN NESS.

Sworn to before me, this 1st }
day of October, 1860, }

JNO. AHERN, *Commissioner of Deeds.*

STATE OF NEW YORK: }
CITY AND COUNTY OF NEW YORK, } ss.

Peter Hammond, of Jersey City, being duly sworn, doth depose and say: That he is the agent for and one of the owners of the tugboats Satellite, Saturn, and Frank; that the office of the said tugboats is at No. 43 West street, in the city of New York; that Augustus Van Ness was employed by this deponent as clerk, to attend to the business of the said boats, in the month of April last, and that he has been in his employ as such clerk since that time; that he has daily and regularly attended to the said business, and has been at all times subject to the directions of the deponent.

PETER HAMMOND.

Sworn to before me, this 1st }
day of October, 1860, }

JNO. AHERN, *Commissioner of Deeds.*

State of New York.

No. 83.

IN SENATE,

April 1, 1862.

REPORT

OF THE COMMITTEE ON CANALS, ON THE BILL RELATIVE TO
THE ONEIDA LAKE CANAL LOCKS AND IMPOSING CANAL
TOLLS ON ONEIDA LAKE.

The committee on canals, to which was referred Assembly bill No. 66, in relation to the locks on the Oneida Lake canal, have had the same under consideration, and submit the following

REPORT:

The second section of the act referred to us reads as follows:

"§ 2. The Oneida Lake canal is hereby declared to extend from Higginsville, on the Erie canal, to the eastern terminus of the Oneida River improvement, at Brewerton; and the same rate of tolls now chargeable on the other canals of the State, shall be charged and collected on all the boats and cargoes navigating or transported on the entire distance which they may navigate or be carried on said canal, or on the Oneida lake."

The Oneida Lake canal commences on the Erie canal at a place called Higginsville, and from thence runs northwardly in an independent channel about $3\frac{1}{4}$ miles to Wood creek; on this independent channel there are seven locks of various lifts, the last one of which locks down into Wood creek; the navigation then follows the bed or channel of that stream about $2\frac{3}{4}$ miles, and then enters the shoal waters at the head of Oneida lake; the size of the locks and prism of this canal correspond with the other lateral canals of this State; it was built by a private company,

and by said company sold and transferred to the State under chapter 258, Laws of 1840, for the sum of \$50,000.

The construction of this canal made a navigable communication from the Erie canal, at or near Higginsville, through Oneida lake and Oneida River improvement to the Oswego canal, at or near Three River point; the distance between these two points is as follows :

Oneida Lake canal	6 miles.
Oneida lake	23 "
Oneida River improvement	20 "

Making the total distance from Higginsville, on the Erie canal, to Three River point, on the Oswego canal, 49 miles; heretofore no tolls have been charged, either upon boats or their cargoes, passing over Oneida lake, but the bill before us proposes to declare Oneida lake to be a part of the Oneida Lake canal, and to impose canal tolls upon all boats and tonnage passing over said lake or any part thereof.

It is difficult to limit the sovereignty of legislative power, where the limitation is not expressly imposed by the Constitution; but this is believed to be the first attempt, on the part of the Legislature, to impose tonnage duties on boats and their cargoes navigating any of the great lakes situated wholly within this State.

In this case the claim appears to be founded upon the fact that, because the Oneida Lake canal terminates in Oneida lake, a canal insignificant both in length and tonnage, yet the fact of its terminus in the lake, is deemed sufficient to justify the Legislature in declaring the whole of that lake, a body of water twenty-three miles in length, and having an average width of about six miles, to be an appendage, or rather a part of the Oneida Lake canal, and subject to the same tonnage duties or tolls charged upon the canals, reversing the maxim that "the greater includes the less," but hereafter the less shall include the greater, the canal having an artificial navigation of only three and a quarter miles, whereas the lake has a natural navigation of twenty-three miles; yet by this act the canal is made to swallow up the lake.

The principle now claimed to be established by this bill would, if carried out, impose canal tolls upon the Cayuga, Seneca and Crooked lakes, as each of those lakes have State canals terminating in them, and in order to subject all of the remaining great

inland waters of the State to canal tolls, it is only necessary to terminate a canal in them, however short and unimportant such canal may be; yet the fact of the termination being settled, would impose canal tolls upon the body of navigable water connected with such terminus.

The ebbing and flowing of the tide in Hudson river would scarcely save the tonnage on the navigable portions of that river from canal tolls; for in no sense can that river be deemed an estuary from the sea, and is wholly within the jurisdiction of this State.

Long before any of the canals of this State were constructed, the great inland waters of the State were declared public highways, and as such they have been used by our citizens, free from governmental restrictions or impositions of any kind, and to change their condition now, would be a violation of public faith which no present necessity can justify.

The proposition to impose canal tolls on those natural bodies of navigable waters, and to declare them portions of the canals of this State, is nothing less than altering the certified maps of the canals, now on file in the Canal Department, in pursuance of law; these maps show the place of beginning, the termination, and the entire length of each canal, with the blue line on each side marking the possessions of the State; yet this act proposes to obliterate them.

With these facts before us, and entertaining these views, the committee have amended the bill by striking out the second section and adding an amendment to the first section of the bill, and as amended recommend its passage.

CHARLES COOK,
ALMANZOR HUTCHINSON,
RICHARD B. CONNOLLY.

State of New York.

No. 84.

IN SENATE,

April 1, 1862.

REPORT

OF THE COMMITTEE ON CANALS, ON THE PETITION OF JOHN SHERIDAN, PETER CONWAY AND JAMES SLATER, FOR RELIEF.

The committee on canals, to which was referred the petition of John Sheridan, Peter Conway and James Slater, contractors for the completion of section No. 207, Erie canal enlargement, on the Cayuga marshes, near Montezuma, have had the same under consideration, and submit the following

REPORT :

The petitioners claim extra compensation of ten cents per cubic yard, over and above their contract price, on 42,330 cubic yards of embankment put into that section, claiming that there was that quantity more than was contemplated by the act, chapter 300, Laws of 1859, which was passed for their relief, although that act expressly declared that the extra compensation to be allowed under it should not exceed the sum of \$25,000; and this sum has been allowed and paid to these petitioners, when they did not complete the work within the time required by the act aforesaid.

In order to get the facts in relation to this claim, the committee made inquiries at the Canal Department, and at their request the Auditor has furnished the following statement, made from the original estimate and final account and settlement of section 207, now on file in his Department :

"STATE OF NEW YORK:

CANAL DEPARTMENT,

ALBANY, *March 17, 1862.* }

HON. CHARLES COOK,

Chairman, &c.:

SIR—The act, chapter 300, of the Laws of 1859, authorized the Canal Board to add to the contract price for embankment and lining on section 207, Erie canal enlargement, ten cents per cubic yard; this addition has been included in the monthly estimates, and has been paid.

I do not know that the amount of the allowance or limitation in the bill (\$25,000), was based upon any estimate of quantities made up at that time. The quantities will be shown in the final estimate. The work was not completed in 1859; the last monthly estimate was paid July, 1860.

The final estimate for the whole work has been made up and paid, which includes the \$25,000 named in the act of 1859.

The whole amount already paid for the completion of this work is \$144,564.78. The engineer's estimate for the letting gave 237,000 cubic yards of embankment, and 14,000 cubic yards of lining.

The State has paid for 332,466 cubic yards of embankment, and 12,057½ cubic yards of lining. The State paid the contractors \$10,864.14 for 181,067 feet of hemlock timber, at \$60 per M., board measure.

The final estimate covers every charge the contractors are entitled to, under the contract and the law of 1859.

Yours,

N. S. BENTON."

This official document from the Canal Department, taken from the final account and settlement for the construction of this section No. 207, shows that the contractors were actually paid for nearly 100,000 cubic yards of embankment more than was originally estimated that the section contained; they were also paid the extraordinary price of \$60 per M., board measure, for 181,067 feet of hemlock lumber, and \$25,000 by order of the Legislature, as an extra allowance upon their contract price.

These facts would seem to forbid further legislation upon this subject, and the committee therefore offer the following resolution:

Resolved, That the prayer of the petitioners ought not to be granted.

All of which is respectfully submitted.

CHARLES COOK,
RICHARD B. CONNOLLY,
ALMANZOR HUTCHINSON.

State of New York.

No. 85.

IN SENATE,

April 1, 1862.

COMMUNICATION

FROM HIS EXCELLENCY THE GOVERNOR, TRANSMITTING RESOLUTIONS OF THE LEGISLATURE OF THE STATE OF MAINE, RELATIVE TO THE NATIONAL VICTORIES IN THE VALLEY OF THE MISSISSIPPI.

STATE OF NEW YORK:

EXECUTIVE DEPARTMENT,

ALBANY, *April 1, 1862.* }

To the Senate:

I have received, in official form, and transmit herewith a copy of the joint resolutions of the Legislature of Maine, congratulating our brethren of the West upon the brilliant national victories achieved by their arms in the Valley of the Mississippi.

E. D. MORGAN.

STATE OF MAINE.

Resolve in reference to our victories in the West.

Resolved, That the people of Maine have witnessed with patriotic pride, the triumph of the national armies in the Valley of the Mississippi, and they hereby extend their congratulations to their loyal brethren of the West, upon the undying laurels they have won in the rapid and splendid succession of victories achieved by them. To the troops of Illinois especially, for their heroic conduct at Fort Donelson, the country owes a debt of

gratitude which cannot be too heartily acknowledged, and which can never be repaid.

Resolved, That a copy of the foregoing be sent to the Governor of Illinois and other Western States.

IN THE HOUSE OF REPRESENTATIVES, }
MARCH 19, 1862. }

Read and passed.

J. G. BLAINE, *Speaker*.

IN SENATE, *March* 19, 1862.

Read and passed.

J. H. GOODENOW, *President*.

MARCH 19, 1862.

Approved.

ISRAEL WASHBURN, JR.

STATE OF MAINE:

OFFICE OF SECRETARY OF STATE, }
AUGUSTA, *March* 25, 1862. }

I hereby certify that the foregoing is a true copy of the original, as deposited in this office.

JOSEPH B. HALL,
Secretary of State.

State of New York.

No. 86.

IN SENATE,

March 29, 1862.

COMMUNICATION

FROM W. JAY HASKETT, ONE OF THE COMMISSIONERS OF EXCISE OF THE CITY OF NEW YORK, RELATIVE TO THE NUMBER OF LICENSES GRANTED IN SAID CITY, THE AMOUNT RECEIVED THEREFOR, AND THE NUMBER OF SUITS PENDING IN RELATION THERETO.*

To the Hon. Senate of the State of New York:

In response to the resolution of your Honorable body of the 7th instant, the undersigned, one of the Commissioners of Excise of the county of New York,

REPORTS :

That the number of licenses granted by the board for the year 1861, is 994, and that the number paid for is 747, at \$30 each, amounting to \$22,410, as appears by the report of the treasurer of this county, and that the number of licenses not yet paid for is 247.

That the undersigned has not received any money for licenses, but has strictly complied with the rules of the board, which require the licensee to pay the thirty dollars to the county treasurer, who then gives him a voucher for the payment, and upon the presentation thereof to the undersigned the licensee receives his license.

In relation to the legal affairs of the board, the undersigned states that the same is exclusively conducted by the counsel and attorney to the board, and that he has no accurate knowledge of the number of suits commenced, still in litigation or discontinued,

and that he has not received any sums of money for services for the settlement or withdrawal of suits from the defendants thereto.

NEW YORK, *March* 26, 1862.

Respectfully,

W. JAY HASKETT.

Sworn to before me, this 26th {
day of March, 1862, }

T. STUYVESANT,

Commissioner of Deeds.

State of New York.

No. 87.

IN SENATE,

April 2, 1862.

GENERAL ORDERS.

356. An act to encourage the investment in small sums, by the people of this State, in the stocks of the State.
357. (Assembly, No. 66.) An act to amend "An act to provide for the rebuilding of the locks on the Oneida Lake canal."
358. An act for the relief of Russell Martin and Theodore H. Lucky, assignees of a contract to W. McArthur, for the repairs of section No. 3, Genesee Valley canal.
359. (Assembly, No. 346.) An act for the relief of Susan A. Shultz and Ida M. Shultz, infants, in certain lands devised to them by Daniel H. Shultz.
360. (Assembly, No. 198.) An act to incorporate the Board of Foreign Missions of the Presbyterian Church of the United States of America.
361. (Assembly, No. 68.) An act to authorize the construction and maintenance of a bridge over the Genesee Valley canal at Atkinson street, in the city of Rochester.
362. (Assembly, No. 161.) An act to empower Holley Lodge, No. 140, of the Independent Order of Odd Fellows of Northern New York, in the village of Holley and county of Orleans, to hold and convey real and personal estate, and constitute the same a corporation.
363. (Assembly, No. 227.) An act to further amend an act entitled "An act appointing commissioners to lay out a road between the village of Dunkirk and the village of Cherry Creek, in the county of Chautauqua," passed April 13, 1857.

364. (Assembly, No. 200.) An act in reference to highway labor in the village of Oneonta, Otsego county.
365. (Assembly, No. 172.) An act to provide for keeping in repair the highway leading from the Sacandaga river to Mount Pleasant.
366. (Assembly, No. 237.) An act to repeal an act entitled "An act to incorporate the Metropolitan Medical College of the city of New York," passed March 28, 1857.
367. (Assembly, No. 202.) An act to incorporate the Nanuet Fire Engine Company, at Nanuet, town of Clarkstown, in the county of Rockland.
368. (Assembly, No. 216.) An act to consolidate the towns of Savona and Bath, in the county of Steuben.
369. (Assembly, No. 75.) An act to incorporate the Columbian Fire Engine Company, No. 1, of Spring Valley, Ramapo, Rockland county, State of New York.
370. An act to amend the Code of Procedure, and to extend the term of office of the Commissioners of the Code, appointed under the act of April, 1857, and to repeal section 37, article 2, title 2, chapter 1, part 3, of the Revised Statutes.
371. (Assembly, No. 217.) An act in relation to the superintendents of the poor in the county of Cayuga.
372. An act for the relief of John F. Packard and Henry Hoffman, sureties of Purdy M. Willetts, contractor for canal repairs on section 10, Erie canal.
373. (Assembly, No. 170.) An act permitting the Buffalo and Allegany Valley Railroad Company to extend their road, and to extend the time for building the same.

State of New York.

No. 88.

IN SENATE,

April 4, 1862.

GENERAL ORDERS.

374. An act to authorize the Commissioners of the Land Office to convey the right to erect and maintain a pier off the Battery, in the city of New York.
375. (Assembly, No. 133.) An act making appropriations for the support of government for the fiscal year commencing on the first day of October, in the year 1862.
376. (Assembly, No. 231.) An act to amend title 1, part 2, chapter 5, article 8, of the Revised Statutes.
377. (Assembly, No. 141.) An act to facilitate the taking of oaths and affirmations and the acknowledgment or proof of written instruments by persons in the military service of this State or the United States, as volunteers.
378. (Assembly, No. 179.) An act to amend an act entitled "An act for the incorporation of the village of Oxford, and for other purposes," passed April 6, 1808, and the acts amending the same.



State of New York.

No. 89.

IN SENATE,

April 5, 1862.

GENERAL ORDERS.

379. (Assembly, No. 115.) An act for the relief of Willis B. Sayre.
380. (Assembly, No. 457.) An act for the relief of Hiram H. Walbridge, Gilbert Peterson and Charles A. Danolds.
381. (Assembly, No. 98.) An act for the relief of Benjamin B. Clapp, for canal damages.
382. (Assembly, No. 193.) An act for the appraisal of the damages of Nathaniel M. Sargeant, caused by a break in the Black River canal.
383. (Assembly, No. 152.) An act to enable Cuyler Copeland and others to file claims with the Canal Appraisers for canal damages, and to provide for the payment thereof.
384. (Assembly, No. 120.) An act authorizing the appraisal and payment of canal damages to Patrick Buckley, caused by a break in the Champlain canal in the town of Fort Edward, Washington county.
385. (Assembly, No. 114.) An act establishing a fund for the benefit of the Stockbridge Indians, and for the final adjustment of their claims.

State of New York.

No. 90.

IN SENATE,

February 1, 1862.

ANNUAL REPORT

OF THE AUDITOR OF THE CANAL DEPARTMENT RELATIVE
TO THE EXPENDITURES ON THE CANALS OF THE STATE
OF NEW YORK.

STATE OF NEW YORK:

CANAL DEPARTMENT, }
ALBANY, *January 7th*, 1862. }

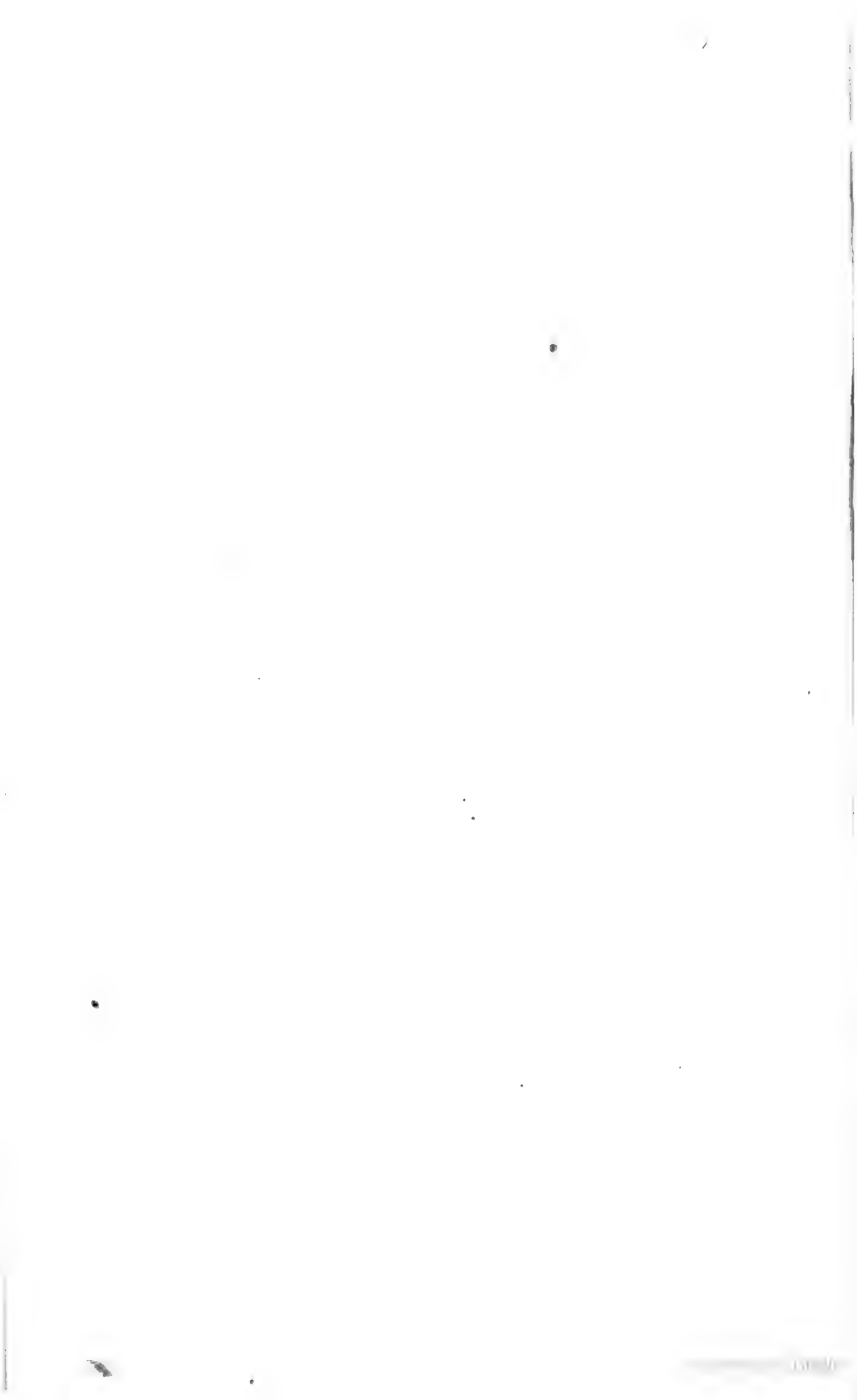
To the President of the Senate:

SIR—I herewith transmit the annual report required by law from this Department, showing the expenditures on the canals for the fiscal year ending on the 30th of September last.

I have the honor to be, very respectfully,

Your obedient servant,

N. S. BENTON, *Auditor.*



REPORT.

STATE OF NEW YORK:
CANAL DEPARTMENT, }
ALBANY, December 1st, 1861. }

To the Legislature:

The Auditor of the Canal Department, in obedience to the requirements of the statute, submits the following report of expenditures on the several canals of this State for the fiscal year ending the 30th September, 1861.

BY CANAL COMMISSIONERS.

The following is a summary statement of the amounts expended by the several Commissioners during such fiscal year, the particular items of which are fully exhibited in the tables appended hereto, and particularly referred to in such summary.

Expended by the Canal Commissioners, including their salaries, for the fiscal year ending 30th September, 1861.

Erie canal.—See A.

William I. Skinner	\$78,859 94	
John M. Jaycox	7,052 84	
Benjamin F. Bruce	68,978 17	
Hiram Gardner	102,477 06	
		\$257,368 01

Champlain canal.—See B.

Charles H. Sherrill	\$239 61	
William I. Skinner	78,635 64	
		78,875 25
Carried forward		\$336,243 26

Brought forward.....		\$336,243 26
<i>Erie canal enlargement.—See C.</i>		
Charles H. Sherrill.....	\$2,612 00	
William I. Skinner.....	139,148 30	
John M. Jaycox.....	19,743 48	
Benjamin F. Bruce	132,803 71	
Samuel S. Whallon.....	102 00	
Chas. H. Sherrill, on the west'n div.	340 00	
Hiram Gardner	266,388 89	
		561,138 38
<i>Oswego canal.—See D.</i>		
John M. Jaycox.....	\$44,102 67	
Benjamin F. Bruce	119,372 02	
		163,474 69
<i>Cayuga and Seneca canal.—See E.</i>		
John M. Jaycox.....	\$21,976 47	
Benjamin F. Bruce	64,804 92	
		86,781 39
<i>Chemung canal.—See F.</i>		
John M. Jaycox.....	\$20,878 68	
Benjamin F. Bruce	18,738 16	
		39,616 84
<i>Crooked Lake canal.—See G.</i>		
John M. Jaycox.....	\$2,264 43	
Benjamin F. Bruce	4,325 80	
		6,590 23
<i>Chenango canal.—See H.</i>		
John M. Jaycox.....	\$11,336 80	
Benjamin F. Bruce	49,192 57	
		60,529 37
<i>Black River canal.—See I.</i>		
Charles H. Sherrill	\$1,008 14	
William I. Skinner	119,846 80	
		120,854 94
<i>Genesee Valley canal.—See J.</i>		
Hiram Gardner.....		42,333 37
Carried forward		\$1,417,562 47

EXPENDITURES ON CANALS.

5

Brought forward.....\$1,417,562 47

Oneida Lake canal.—See K.

John M. Jaycox.....	\$2,728 15	
Benjamin F. Bruce	1,177 61	
		3,905 76

Oneida River improvement.—See L.

John M. Jaycox.....	\$14,419 03	
Benjamin F. Bruce	635 27	
		15,054 30
		<u>\$1,436,522 53</u>

The following sums were in the hands of the Canal Commissioners at the close of the fiscal year, viz. :

William I. Skinner	\$7,462 56	
Benjamin F. Bruce	3,567 88	
Hiram Gardner.....	2,200 43	
		\$13,230 87

The following table exhibits the expenditures by the Canal Commissioners for clerk hire, travel fees and sundry incidental expenses :

ITEMS.	Wm. I. Skinner, Canal Commis- sioner.	John M. Jaycox, Canal Commis- sioner.	Benj. F. Bruce, Canal Commis- sioner.	Hiram Gardner, Canal Commis- sioner.	Total.
Clerk hire	\$1,072 87	\$249 99	\$749 97	\$999 96	\$3,072 79
Travel fees of Commissioners	300 00	200 00	283 32	300 00	1,083 32
Travel fees of clerk	8 82				8 82
Office furniture.....	23 45		445 07	39 80	508 32
Office rent.....				118 00	118 00
Postage.....	84 60	21 00	91 68	73 85	271 13
Telegraphing.....	107 51	10 02	89 13	63 81	270 47
Express freight.....	14 63	1 00	24 90	12 88	53 41
Incidental =.....	90 21	33 25	299 85	102 40	525 71
	<u>\$1,702 09</u>	<u>\$515 26</u>	<u>\$1,983 92</u>	<u>\$1,710 70</u>	<u>\$5,911 97</u>

BY ENGINEERS.

The expenses of the engineer corps on the several canals in this State during the last fiscal year amount to the sum of \$75,419 06. Such expenditures are particularly set forth in statement (M.), appended hereto, and are distributed among the several canals as follows :

EXPENDITURES ON CANALS.

Erie canal enlargement.....	\$42,412 48
Champlain canal.....	4,845 73
Oswego canal.....	6,778 06
Cayuga and Seneca canal.....	5,026 56
Crooked Lake canal.....	291 73
Chemung canal.....	3,414 34
Black River canal.....	7,318 46
Genesee Valley canal.....	2,841 49
Chenango canal.....	2,490 21
	\$75,419 06

Statement (N.) exhibits the expenditures of the engineer corps on the several canals of the State for the last ten years, with the following results :

1852.....	\$153,837 08
1853.....	84,764 82
1854.....	120,113 84
1855.....	199,862 35
1856.....	247,624 11
1857.....	195,229 71
1858.....	146,550 01
1859.....	74,581 90
1860.....	97,821 09
1861.....	75,419 06

Statement (O.) exhibits the expenditure of the division and resident engineers for clerk hire, travel fees and sundry incidental expenses :

Travel.....	\$5,862 58
Clerk hire.....	3,561 25
Stationery.....	1,088 13
Fuel.....	383 60
Light.....	153 08
Office rent.....	1,502 04
Postage and telegraph.....	771 97
Miscellaneous.....	604 82
	\$13,927 47

Statement (P.) gives the amount expended for repairs by each superintendent and Canal Commissioner, and the amount paid to each contractor for repairs, with the average cost per mile.

Statement (Q.) gives the expenditures by superintendents and resident engineers, including payments to repair contractors, with the average number of miles of each section, on all the canals of the State, for the years ending the 30th September, 1860 and 1861.

Statement (R.) gives the cost of repairs of breaches in 1860 and 1861.

Statement (S.) gives the expenditures for repairs by superintendents, resident engineers and Canal Commissioners, including payments to repair contractors on each canal for the years ending the 30th September, 1860 and 1861.

Statement (T.) gives the average cost per mile for each division of the Erie canal by the superintendents and resident engineers, including payments to repair contractors from 1835 to 1861, both inclusive.

Statement (U.) gives the amount expended by the superintendents and resident engineers, including payments to repair contractors, and the average cost on each and all of the canals from 1826 to 1861.

Statement (V.) gives the total amounts expended for repairs of old, and the erection of new work, on the Erie canal, divided into three sections, and the average cost per mile of each section, from 1835 to 1861, inclusive.

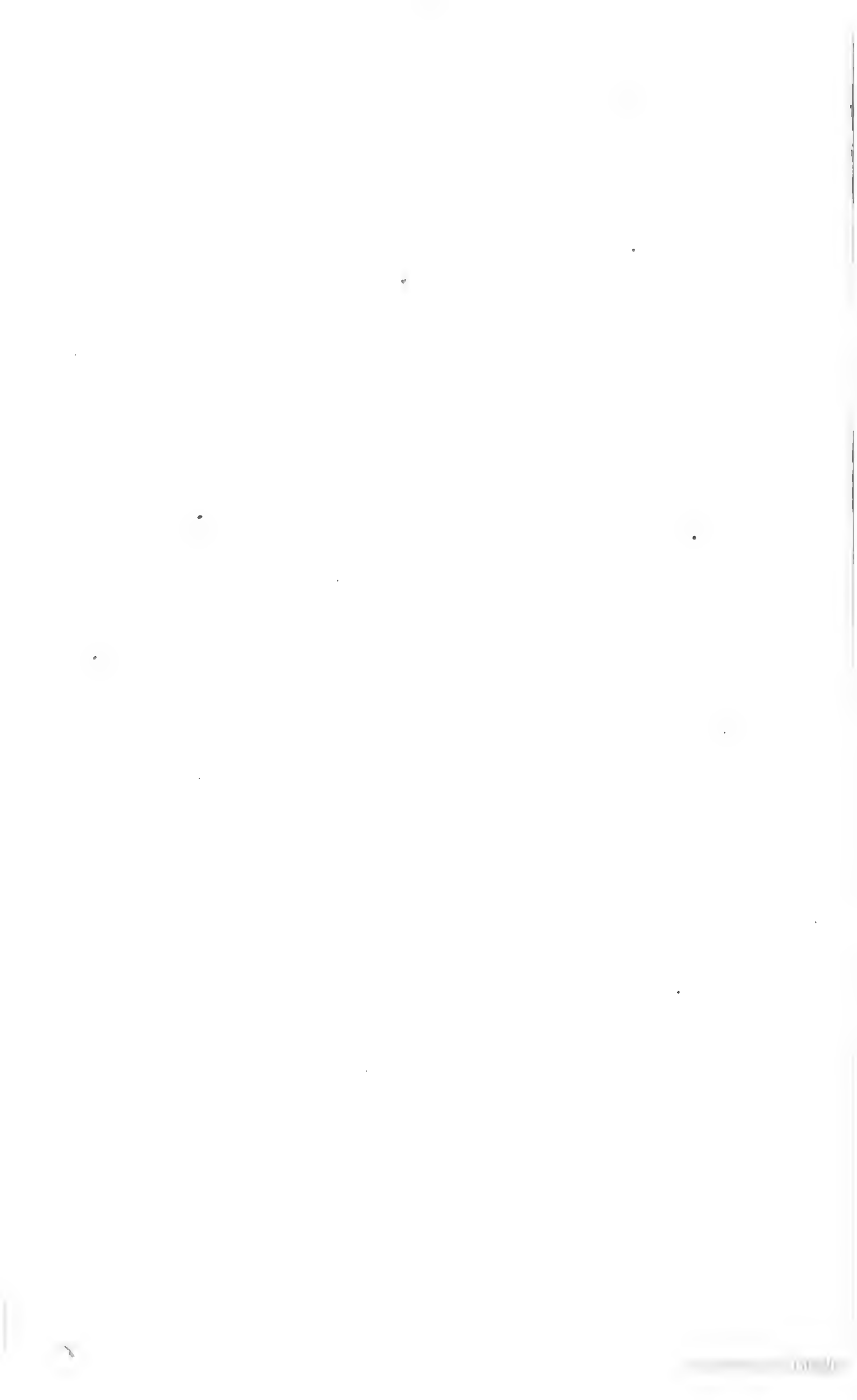
Statement (W.) gives the total amounts expended for repairs of old, and the erection of new work, on the Champlain canal, and the average cost per mile, from 1835 to 1861, inclusive.

Statement (X.) gives the expenditures for repairs on each Canal Commissioners' division, for the years 1860 and 1861.

Statement (Y.) gives the expenditures for repairs by the superintendents, resident engineers and Canal Commissioners, including payments to repair contractors for eleven years, ending with 1861, also the average cost per year for the first five, and the last six years of said period.

Respectfully submitted,

N. S. BENTON, *Auditor.*



DOCUMENTS.



(A.)

ERIE CANAL.

*Vouchers rendered by William I. Skinner, Canal Commissioner, for
payments made by him.*

Salary from 1st July, 1860, to 1st July, 1861,..... \$2,000 00

MISCELLANEOUS.

1860.

Oct.	8.	Wm. S. Schoulten, timber used in repair section No. 1	\$59 29	
	31.	Mrs. Mink, washing towels.....	1 50	
	31.	C. S. Cutler, telegraphing	9 07	
	31.	Wm. W. Wight, services and travel, clerk to contracting board	148 56	
	31.	A. P. Ten Broeck, clerk Canal Commissioner	129 16	
Nov.	30.	C. S. Cutler, telegraphing.....	14 66	
	30.	A. P. Ten Broeck, clerk canal Commissioner	129 16	
	30.	Wm. W. Wight, clerk contract- ing board.....	125 00	
Dec.	8.	Squire Whipple, building bridge repair section No. 1	1,320 00	
	27.	A. P. Ten Broeck, clerk Canal Commissioner, half month...	64 58	
	31.	W. W. Wight:		
		Travel	\$10 04	
		Clerk contracting board	125 00	
		Clerk half month, Canal Comm'r ...	64 58	
			199 62	
		Carried forward.....	\$2,200 60	\$2,000 00

Brought forward.....		\$2,200 60	\$2,000 00
1861.			
Jan.	3. W. I. Skinner, travel for quarter	100 00	
	7. C. Comstock, postage.....	20 85	
	7. W. B. Sprague, stationery bill.	49 02	
	8. W. S. Warren, office furniture.	3 00	
	9. Wells, Butterfield & Co., packages by express.....	6 25	
	16. F. & T. Kearney, superintendents Waterman & Crummy's bills	47 40	
	30. Taylor & Waterman, office repairs	2 50	
	31. Mrs. Mink, washing towels....	1 50	
	31. Watts T. Loomis, services as clerk to Canal Comm'rs	83 33	
	31. C. Comstock, postage bill.....	22 30	
	31. G. S. Anable, repairs commissioners' office.....	7 69	
	31. W. T. Wheeler, furniture	20 45	
Feb.	6. Telegraph company telegrams.	11 09	
	19. James Shaughnesy, labor under Van Valkenburgh.....	3 00	
	28. W. T. Loomis, clerk Canal Commissioner	83 33	
March	1. Telegraph company telegrams.	6 37	
	22. James Kinnear, office repairs..	1 75	
	31. W. T. Loomis, salary as clerk Canal Commissioner.....	83 33	
	31. Jacob Everson, temporary occupation of land near lock 41..	5 00	
April	1. Wm. I. Skinner, travel for quarter	100 00	
	1. C. Comstock, postage.....	11 15	
	2. Express company, express bill.	3 00	
	2. Telegraph company, telegrams.	7 03	
	25. Edward Fitch, counsel before Appraisers	52 00	
	30. Mrs. Mink, washing towels....	1 50	
Carried forward.....		\$2,933 44	\$2,000 00

Brought forward.....		\$2,933 44	\$2,000 00
1861.			
April 30.	W. T. Loomis, clerk and travel	\$87 63	
May	1. Telegraph company, telegrams.	5 37	
	1. George Dawson, postage.....	10 30	
	30. W. B. Sprague, stationery	18 00	
	31. W. T. Loomis, clerk and travel	87 85	
June	1. S. C. Rodgers, labor, repairing lock in 1857.....	11 50	
	3. Telegraph company, telegrams.	16 00	
	30. W. T. Loomis, salary as clerk .	83 33	
July	1. Express company, despatches .	5 38	
	1. William I. Skinner, travel for quarter	100 00	
	1. George Dawson, postage.....	20 00	
	1. Telegraph company, telegrams.	7 56	
	1. W. H. Mink, repairing Commis- sioners' office.....	6 75	
	9. S. Lansing, land damages, Watervliet, Albany county..	25 00	
	10. Comstock & Cassidy, publishing notice to contractors	27 60	
	10. S. & R. Earl, counsel fees before Appraisers	56 00	
	19. Weed, Dawson & Co., publish- ing notice.....	27 60	
	31. W. T. Loomis, salary as clerk..	83 33	
	31. C. B. Freeman, publishing notice	13 20	
	31. E. D. Baker, do do	10 80	
Aug.	1. Telegraph company, telegrams.	12 96	
	31. W. T. Loomis, clerk Canal Com- missioner	83 33	
Sept.	1. Telegraph company, telegrams.	17 40	
	2. Samuel Capron, labor, old bill.	22 00	
	3. Jacob Souge, do do	25 00	
	30. W. T. Loomis, clerk Canal Com- missioner	83 33	
			3,880 66
Carried forward			\$5,880 66

EXPENDITURES ON CANALS.

Brought forward.....		\$5,880 66
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CONTRACTORS.

No. 71. John F. Hosch, repairs section No. 4	\$8,774 36	
73. John McDonnell, repairs section No. 3	7,418 00	
86. Charles T. Baldwin, removing bevels from locks Nos. 1 and 3 to 18.....	1,615 00	
90. Wm. McClary, repairs sec. No. 2	9,470 78	
91. Eli T. Bangs, repairs sec. No. 5	7,563 63	
92. Charles T. Baldwin, repairs sec- tion No. 1.....	34,608 64	
96. John F. Hosch, removing bevels from locks 35 to 45.....	550 00	
97. William McClary, removing bev- els from locks 19 to 27.....	115 00	
100. Eli T. Bangs, raising towpath, section 116	1,163 87	
112. George H. Peck, rebuilding Schoharie dam.....	1,700 00	
		72,979 28

Total amount expended by William I. Skinner, Canal Commissioner on the Erie canal.....		\$78,859 94
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*Vouchers rendered by John M. Jaycox, Canal Commissioner, for
payments made by him.*

Salary from 1st July, 1860, to 1st January, 1861 ...	\$1,000 00
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1860.

MISCELLANEOUS.

Oct. 15. R. Daggett, steamer conveying Canal Board.....	\$108 45	
23. Henry Crawford, alterations to weigh-lock house.....	31 93	
24. James Taylor, gauge rod for weigh lock	50	
24. Kilman & Hubbard, wood Com- missioners' office	3 00	
Carried forward		\$143 88
		\$1,000 00

EXPENDITURES ON CANALS.

15

Brought forward.....	\$143 88	\$1,000 00
1860.		
31. H. J. Sedgwick, postage.....	6 00	
31. Telegraph company, telegrams.	4 23	
31. E. G. Nye, clerk Canal Commis- sioners	83 33	
31. Ruger & Lester, counsel fees, &c	5 00	
31. John M. Jaycox, travel for quarter	100 00	
Nov. 19. James Doty, repairing measur- ing rod.....	1 75	
20. A. M. Root, constructing cattle guard	28 19	
27. Kilman & Hibbard, fuel	6 25	
30. H. J. Sedgwick, postage	6 00	
30. C. W. Cornell, stationery	7 75	
30. Telegraph company, telegrams.	3 75	
30. American Express company, despatches	1 00	
30. E. G. Nye, services as clerk...	83 33	
Dec. 20. C. Comstock, postage.....	3 00	
31. H. J. Sedgwick, postage	6 00	
31. Kellman & Hibbard, fuel	6 50	
31. Telegraph company, telegrams.	2 04	
31. C. W. Cornell, stationery	6 75	
31. E. G. Nye, services as clerk...	83 33	
31. John M. Jaycox, travel for quarter	100 00	
31. Christopher Casey, repairing gutters and sidewalks.....	3 00	
		691 08

CONTRACTORS.

No. 64. Albert M. Root, repairs section No. 9.	\$1,627 76	
65. T. J. Vanderlip, repairs section No. 7.....	700 68	
79. Lewis Selye, repairs section No. 8	3,033 32	
		5,361 76

Total amount expended by John M. Jaycox, Canal
Commissioner, on the Erie canal..... \$7,052 84

Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

Salary from 15th January to 1st July, 1861..... \$916 65

MISCELLANEOUS PAYMENTS.

1861.

Jan.	23.	T. J. Vanderlip, deficiency in tools, &c., section 7.....	\$325 00	
	21.	R. Tolman, fuel.....	4 00	
	31.	Wynkoop & Bros., stationery..	4 16	
	31.	H. J. Sedgwick, postage.....	6 00	
	31.	Telegraph company, telegrams..	2 07	
	31.	Express company, despatches..	50	
	31.	Albany post office, postage....	6 00	
	31.	W. T. Loomis, clerk Board of Canal Commissioners.....	50 00	
	31.	W. W. Wight, clerk Contracting Board.....	141 52	
	31.	E. G. Nye, clerk Canal Commissioners.....	83 33	
Feb.	4.	Joel Thayer, bulk head gates, Skaneateles lake reservoir...	283 32	
	11.	H. C. Brower, repairing locks, Commissioners' office.....	4 92	
	28.	D. H. Bruce, services as clerk..	83 33	
	28.	Wynkoop & Bros., stationery..	4 79	
	28.	Morse Telegraph company, telegrams.....	3 29	
	28.	Express company, despatches..	1 75	
	28.	W. W. Wight, services as clerk and travel.....	142 34	
	28.	M. W. Tillotson, clerk Board of Canal Commissioners.....	50 00	
	28.	H. J. Sedgwick, postage.....	6 53	
Mar.	9.	Telegraph company, telegrams..	2 19	
	12.	J. G. K. Truair, publishing notice.....	10 50	
	30.	W. W. Wight, salary and travel	166 22	
	30.	M. W. Tillotson, clerk Canal Commissioners.....	50 00	
Carried forward			\$1,431 76	\$916 65

EXPENDITURES ON CANALS.

17

Brought forward.....		\$1,431 76	\$916 65
1861.			
Mar.	30. D. H. Bruce, clerk Canal Commissioners	83 33	
	30, J. G. K. Truair, publishing notice	38 00	
April	1. B. F. Bruce, travel.....	83 32	
	1. Charles Scherf, cleaning Commissioners' office	5 00	
	1. Telegraph company, telegrams	7 96	
	1. H. J. Sedgwick, postage	6 26	
	1. Express company, despatches	3 88	
	12. E. H. Roberts, publishing notice	178 43	
	13. D. B. Kellman, fuel	6 50	
	13. D. S. & S. P. Geer, fire proof safe	156 00	
	16. W. C. Bryant & Co., publishing notice	172 57	
	22. Albany postage	10 00	
	30. W. W. Wight, salary and travel	142 59	
	30. M. W. Tillotson, clerk Board Canal Commissioners	50 00	
	30. Express company, packages	4 63	
	30. E. R. Hopkins, water cooler, basin, &c	8 07	
	30. Telegraph company, telegrams	10 68	
	30. Wynkoop & Bros., stationery	7 38	
	30. H. J. Sedgwick, postage	10 34	
	30. D. H. Bruce, clerk Canal Commissioners	83 33	
May	7. J. G. K. Truair & Co, postage stamps	8 00	
	7. J. M. Francis, publishing notice	172 57	
	7. L. K. Cole, one new and repairing boat measure	3 75	
	11. Forsyth & Co., repairing weigh lock scale	184 54	
	18. S. C. Hayden & Co., case for Commissioners' office	35 00	
Carried forward.....		\$2,903 89	\$916 65
[A. No. 179.—S. 90.]		2	

Brought forward		\$2,903 89	\$916 65
1861.			
May	20. L. K. Cole, three boat measures	7 50	
	20. S. P. Piere, lamp and oil for weigh master	2 38	
	21. Mary Aldhoff, cleaning offices ..	7 25	
	31. W. B. Sprague, Jr., stationery ..	236 75	
	31. Charles Scherf, cleaning Commissioners' office	2 00	
	31. Express company, packages ...	3 50	
	31. Telegraph company, telegrams ..	14 63	
	31. M. W. Tillotson, clerk Board Canal Commissioners	50 00	
	31. W. W. Wight, clerk and travel	134 09	
	31. D. H. Bruce, clerk Canal Commissioner	83 33	
	31. R. C. Coon, toweling, pail, &c ..	2 10	
	31. Charles Sentell, printing blank vouchers	2 50	
June	7. P. H. Bender, publishing notice	18 40	
	7. L. L. Alexander, administering oaths	1 50	
	20. T. A. Gleason, book case, Commissioners' office	246 00	
	29. Wm. W. Wight, clerk and travel	139 72	
	29. M. W. Tillotson, clerk Canal Commissioners	54 30	
	29. J. G. K. Truair & Co., postage stamps	4 20	
	29. Telegraph company, telegrams ..	5 74	
	29. Express company, packages ...	2 88	
	29. D. H. Bruce, clerk Canal Commissioner	83 33	
	30. B. F. Bruce, travel for quarter	100 00	
	30. Thomas Brazel, repairing drawing boards	6 25	
	30. J. B. Rice, freight on timber for weigh lock	10 00	
Carried forward		\$4,122 24	\$916 65

EXPENDITURES ON CANALS.

19

Brought forward.....		\$4,122 24	\$916 65
1861.			
July	1. Edward Smith, freight on timber for weigh lock.....	6 00	
	10. S. Vandemark, timber for weigh lock	163 42	
	12. J. S. Worden, removing old weigh lock scale	50 00	
	13. J. E. Van Cleick, moving privy	26 81	
	18. Bradley, Pashall & Co., chain for boat stays, weigh lock ...	18 53	
	18. N. S. Graves, counsel fees.....	25 00	
	19. Weed, Dawson & Co., publishing notice.....	184 28	
	24. F. T. Davis, cleaning State ditch	125 00	
	29. Albany post office, postage, Contracting Board	10 00	
	31. D. H. Bruce, clerk Canal Commissioner	83 33	
	31. M. W. Tillotson, clerk Board Canal Commissioners	50 00	
	31. W. W. Wight, clerk Contracting Board	125 00	
	31 Charles Almang, cutting stone in weigh lock.....	30 00	
	31. Scovey & Barton, oil for weigh lock trusses	15 10	
	31. Telegraph company, telegrams	11 84	
	31. Express company, packages....	4 76	
Aug.	31. Mary Aldhoff, cleaning office ..	9 00	
	31. N. Y. C. R. R., 308 feet of oak	6 16	
	31. L. K. Cole, fixing chains, weigh lock.....	10 00	
	31. Charles Scherf, janitor to Commissioner	3 00	
	31. M. W. Tillotson, clerk Canal Commissioners.....	50 00	
	31. W. W. Wight, clerk Contracting Board	125 00	
Carried forward.....		\$5,254 47	\$916 65

Brought forward	\$5,254 47	\$916 65
1861.		
Aug. 31. Express company, packages ...	3 50	
31. Telegraph company, telegrams.	26 28	
31. D. H. Bruce, clerk Canal Com- missioner	83 33	
31. H. J. Sedgwick, postage	24 35	
31. Levi Snell, rent of land	8 00	
31. Allen & Pinkerton, casing weigh lock beam	37 81	
Sept. 30. D. H. Bruce, clerk Canal Com- missioner	83 33	
30. M. W. Tillotson, clerk Board Canal Commissioners	50 00	
30. W. W. Wight, clerk Contract- ing Board	125 00	
30. B. F. Bruce, travel	100 00	
30. C. Cook, covering office desk..	1 50	
30. Telegraph company, telegrams.	3 95	
		5,801 52

CONTRACTORS.

No. 64. A. M. Root, repairs section 9 ...	\$813 88	
65. T. J. Vanderlip, repairs section 7	350 34	
79. Lewis Selye, repairs section 8..	3,966 70	
103. James J. Belden, repairing all that part of Erie canal included in repair section No. 9	36,188 56	
104. Thomas Gale, repairing all that part of Erie canal included in repair section No. 7	14,568 36	
109. Thomas Gale, repairs section No. 7	988 84	
110. Charles J. Hayden, repairs sec- tion 9	1,983 32	
111. Fairbanks and company, con- struction of scale in Syracuse weigh lock	3,400 00	
		62,260 00

Total amount expended by Benjamin F. Bruce,
Canal commissioner, on the Erie canal \$68,978 17

*Vouchers rendered by Hiram Gardner, Canal Commissioner, for
payments made by him.*

Salary from 1st July, 1860 to 1st July, 1861..... \$2,000 00

MISCELLANEOUS.

1860.

Oct.	1. John M. Pickett, repairing lock gate	\$2 00		
	1. S. Durkee, labor on break.....	1 00		
	1. A. Remsen, spikes for lock gate	1 01		
	1. B. Calhoun, repairing lock gate	1 00		
	1. Charles R. Hecox, repairing lock gate	1 00		
	1. John W. Pickett, plank for lock gate	25		
	1. H. D. Hall, repairs to lock valve	5 00		
	1. Telegraph company, telegram..	43		
	1. Telegraph company, telegrams..	85		
	1. Dwight Keep, use of shop....	38 36		
	1. G. H. Boughton, serv's as clerk	83 33		
	1. A. Toorance, postage.....	13 65		
	1. Rochester Transportation com- pany, use of steamer for canal board	150 00		
	11. S. Van Alostine snubbing posts	84 79		
	19. Flagler, Sears and Pomeroy, stoves, &c. for office.....	39 80		
	20. S. Jackson's check roll labor in May, 1859, T. S. Foster, Supt. of repairs, Spencer Jackson, foreman	\$21 00		
	John Kearney, labor,	10 00		
	Thomas Tulley, do	10 00		
	Harrison H. Locquier, do	10 00		
	Robert Montgomery, do	10 00		
	John Wilser, do	10 00		
	Dennis Kearney, do	9 00		
	Charles Toome, labor, no voucher	4 00		
	Isaac Hawkins, labor.....	5 00		
Carried forward		\$89 00	\$422 47	\$2,000 00

Brought forward.....		\$89 00	\$422 47	\$2,000 00
1860.				
Oct. 20.	C. E. Ryan, labor, no voucher	11 25		
	William Tooms, labor, no voucher	8 75		
	John Golder, labor, no voucher	8 75		
	N. Post, labor, no voucher	8 75		
	Thomas Tearney, team....	15 00		
		\$141 50		
	Off vouchers not rendered	32 75		
			108 75	
	A. T. Prentiss, Jr., taking affidavits	20		
	Express Co., package	1 75		
	Telegraph Co., telegrams	3 80		
	H. Gardner, travel	100 00		
Nov. 1.	A. Holmes, taking affidavits ..	30		
	G. H. Boughton, services as cl'k	83 33		
2.	James L. Voorhies, removing material from section 207....	571 25		
5.	Lockport Gas Co., gas bill.....	3 50		
	Exchange bank, office rent....	50 00		
15.	Smith Reynolds, carpenter work	3 00		
15.	John Maloney, common labor..	2 00		
15.	James Jackson, Jr., lumber....	11 55		
16.	Albany post office, postage....	10 00		
20.	H. M. Belding, team work	3 00		
29.	Telegraph company, telegrams.	54		
Dec. 3.	Telegraph company, telegrams.	6 22		
	3. G. H. Boughton, clerk.....	83 33		
	4. Lockport Gas company, gas ...	2 40		
	4. S. Van Alstyne, breaking ice..	21 00		
12.	A. Torrance, postage.....	9 00		
14.	Levi Lawrence, breaking ice ..	10 00		
14.	L. M. Parton, giving informa- tion of break.....	5 00		
	17. Williams & Co., livery.....	10 00		
Carried forward.....				
		\$1,522 39	\$2,000 00	

EXPENDITURES ON CANALS.

23

Brought forward.....		\$1,522 39	\$2,000 00
1860.			
Dec.	21. W. Adolph, pens	1 00	
	24. James Jackson, Jr., lumber for dam.....	24 28	
	26. S. Van Alstyne, dam at break..	141 00	
1861.			
Jan.	1. Express company, packages ...	2 50	
	2. S. Campbell, watching bridge irons	45	
	2. G. H. Boughton, services as clerk	83 33	
	3. H. Gardner, travel.....	100 00	
	4. A. Torrance, postage.....	1 60	
	4. W. B. Sprague, blank book....	2 00	
	9. S. Van Alstyne, delivering stone at Middleport.....	137 50	
	11. Charles Tooms, work on State scow in 1859	4 00	
	11. William Tooms, work on State scow in 1859	8 75	
	11. Noah Post, work on State scow in 1859.....	8 75	
	11. Telegraph company, telegrams.	3 84	
	18. Frank Williams, attendance, Barton's case.....	237 00	
	19. Haynes & Rigney, removing 3 boats, on section 333	300 00	
	22. Williams & Co., teaming.....	4 00	
	22. S. Van Alstyne, superintending discharge of surplus water, Lockport	102 50	
	23. John Martin, labor on sec. 312	3 28	
Feb.	4. Telegraph company, telegrams.	1 77	
	7. Express company, packages...	1 25	
	7. G. H. Boughton, clerk.....	83 33	
	8. D. J. Halstead, publishing notice	34 65	
	14. A. Thompson, office rent.....	34 00	
	14. A. Torrance, stamps	9 00	
	25. H. F. Moore, horse hire.....	1 50	
Carried forward.....		\$2,853 67	\$2,000 00

Brought forward.....		\$2,853 67	\$2,000 00
1861.			
Feb.	25. J. De Long, going to Albion to open waste gate.....	1 31	
	27. S. H. Clark, publishing notice.....	10 50	
	27. Telegraph company, telegrams.....	2 48	
Mar.	1. Comstock & Cassidy, publishing notice	22 05	
	4. Patrick O. Daniel, removing ma- terials from section 312.....	3 28	
	6. G. H. Boughton, clerk.....	83 33	
	6. Express company, packages ...	1 50	
	6. Telegraph company, telegrams.....	10 96	
	9. Hampden Fire Insurance com- pany, insurance on weigh lock	37 50	
	21. A. M. Clapp & Co., publishing notice	33 75	
	21. A. T. Prentice, taking affidavits	50	
	21. Telegraph company, telegrams.....	39	
April	1. A. Torrance, postage.....	1 60	
	2. Express company, packages ...	1 75	
	3. Telegraph company, telegrams.....	3 70	
	4. J. F. Bullard, Lockport Gas Co	2 97	
	4. G. H. Boughton, clerk.....	83 33	
	5. Comstock & Cassidy, printing.....	178 42	
	5. Weed, Dawson & Co., do	178 43	
	5. H. D. Morris, do	38 02	
	5. Bruner Bro., do	13 50	
	6. H. Gardner, travel for quarter.....	100 00	
	6. J. M. Francis, printing	166 72	
	6. E. H. Roberts, printing.....	172 57	
	6. W. C. Bryant & Co., printing..	166 72	
	15. Hewes & Hilton, constructing road, Tonawanda creek	170 75	
	22. Curtiss, Butts & Co., printing.....	25 20	
	22. Comstock & Cassidy, printing.....	26 77	
	22. A. T. Prentice, Jr., taking affidavits	40	
May	2. C. D. Tracy, printing.....	13 50	
Carried forward.....		\$4,402 57	\$2,000 00

EXPENDITURES ON CANALS.

25

Brought forward..... \$4,402 57 \$2,000 00

1861.

May	7. Express company, packages...	1 38	
	7. Postmaster, postage, Lockport.	10 00	
	7. G. H. Boughton, services as clerk	83 33	
	8. Richardson & Freeman, printing	21 37	
	10. H. S. Parmele, coal for Commis- sioners' office	21 75	
	25. Williams & Co., livery account	11 50	
	27. Wm. J. Finsley, printing	1 50	
	27. A. Holmes, taking affidavits...	30	
	31. Telegraph company, telegrams.	14 61	
	31. Patrick O'Daniels, removing earth, section 212	3 28	
	31. Michael Joyce, removing earth, section 209	3 06	
	31. Thomas Quinn, removing earth section 209	3 06	
June	1. Telegraph company, telegram.	50	
	8. A. T. Prentice, taking affidavits	20	
	10. G. H. Boughton, services as clerk	83 33	
	14. Express company, despatches...	75	
	14. Ira P. Palmeter, inspector, re- pairing break at Palmyra ...	52 00	
	15. Jesse Peterson, work on repair, section 10	178 73	
	15. A. Strong, printing	30 00	
	17. Telegraph company, despatches	1 52	
	25. George Reynolds, stamps	10 00	
	26. B. C. Moore, witness fees	4 98	
	27. Richardson & Freeman, printing	21 00	
July	1. G. H. Boughton, clerk for June	83 33	
	13. Forsyth & Co., testing weigh lock scale	20 00	
	14. H. C. Fenn, furniture, weigh lock office	15 50	
	22. Telegraph company, telegrams.	5 29	
	23. Wm. Robinson, damages to land	249 00	
	Carried forward	\$5,336 84	\$2,000 00

Brought forward.....	\$5,336 84	\$2,000 00
1861.		
July 23. Wm. Robinson, straw, and giving notice of break.....	7 00	
23. Telegraph company, telegrams.	5 27	
23. O. C. & E. E. Wright, stationery	5 78	
31. A. Thompson, office rent.....	34 00	
July 31. Thomas Henderson, check roll repairing break near Albion :		
Thomas Henderson, foreman..	\$26 36	
Patrick Hadican, labor	6 37	
B. McCormick, do	6 37	
John O'Brien, do	5 43	
T. O'Brien, do	5 43	
Charles Mack, do	4 19	
L. McKeon do	5 43	
Peter Pierce, do	4 81	
Peter Hammond, do	5 43	
Wm. McGaw, do	3 75	
John Wright, do	3 75	
Michael Johnson, do	4 25	
F. McAllister, do	4 25	
John McDermott, do	88	
		86 70
July 31. Jonas Garter's check roll, labor repairing break near Albion :		
Jonas Garter, foreman	\$11 00	
John McGrary, labor	4 88	
P. M. Marshall, do	5 63	
T. Cahill, do	4 13	
Benjamin Brewer, do	5 75	
Wm. Adams, do	5 75	
John Dolan, do	5 25	
William Collins, do	4 25	
Patrick Collins, do	5 00	
Dennis McEvery, do	5 00	
John Delaney, do	5 25	
Jonas Garter, railroad fare of laborers from Lockport to Albion to return.....	17 16	
		79 05
Carried forward.....	\$5,554 64	\$2,000 00

Brought forward..... \$5,554 64 \$2,000 00

1861.

July 31.	B. Holby, witness and counsel for State.....	39 50
Aug. 1.	Weed, Dawson & Co., printing.....	26 78
	1. E. R. Jewett, printing.....	30 38
	1. Telegraph company, telegrams.....	4 12
	1. Express company, despatches.....	2 00
	6. T. C. Ruggles, taking soundings.....	263 44
Aug. 7.	A. T. Prentice, taking affidavits.....	60
	10. G. H. Boughton, clerk.....	83 33
	19. Timothy Barrett, watching ca- nal.....	4 00
	19. Patrick O'Brien, watching ca- nal.....	4 00
	21. Jesse Peterson, regulating boats.....	22 50
	31. Telegraph Co., telegrams.....	1 36

James McAdams, check roll for raising
and removing sunken boats in the
canal at Pendleton, on repair section
13:

James McAdam.....	\$13 12
Robert Maxwell.....	12 69
Peter Mahoney.....	9 00
John Nelson.....	3 50
Edgar Lewis.....	5 69
Giles White.....	4 81
William Blowers.....	12 25
Edwin H. Northrup.....	7 00
A. McAdam.....	27 00
J. Wheston.....	5 91
Robert Bradley.....	2 19
Joseph Abbott.....	24 00
James Collins.....	44
Emerson Hilton.....	3 50
John Prosser.....	4 37
Thomas Hamlin.....	3 94
Thomas May.....	88
Patrick Sharkey.....	3 94

Carried forward..... \$144 23 \$6,036 65 \$2,000 00

Brought forward.....	\$144 23	\$6,036 65	\$2,000 00
Timothy Norton.....	88		
Wm. B. Lane.....	5 69		
Jesse Goddard.....	5 25		
John Morris.....	1 75		
Henry Mullett.....	1 75		
John Van Dusen.....	4 37		
John Burns.....	3 94		
Robert Wilson.....	3 06		
Jacob Shetrum.....	88		
Henry Shetrum.....	2 25		
John McAdam.....	2 25		
Truman Nichols.....	2 25		
John Sharkey.....	1 75		
Wm. Stimpson, blacksmithing..	3 63		
Peter Mahoney, use of chains..	3 00		
Johh W. Howder, use of boat..	18 00		

204 93

Sept. 7. G. Boughton, clerk.....

83 33

25. George Reynolds, postage....

9 00

George Wood, check roll for labor in
boating and placing stone at foot of
banks, 4 miles east of Lockport:

George Wood, foreman, and
boat.....

\$13 75

Joseph Addison, and team...

15 00

Timothy Barrett.....

5 00

Patrick O'Brien.....

5 00

Timothy Lambert.....

5 00

Ellis F. Pierce.....

5 00

Patrick Madden.....

4 00

Thomas Golden.....

4 50

Patrick O'Hare.....

5 00

62 25

6,396 16

CONTRACTORS.

No.

52. John Hutchinson, iron superstruc-
ture and masonry for Sophia-st.
bridge, Rochester.....

782 30

Carried forward.....

\$782 30

\$8,396 16

Brought forward.....	\$782 30	\$8,396 16
No.		
63. Swartz & Henderson, stop gates on Sec. 257.....	1,874 85	
68. McFarlin & McCormick, bridge abutments and landings for Fitz- hugh, High, Brown and Jay-sts., Rochester.....	236 51	
69. Morty McCarty, stop gate, sec- tion 291	96 08	
74. Lewis M. Loss, repairs sec. 12....	3,811 27	
75. Thomas B. Morrow, repairs, sec. 13	1,460 66	
80. Myron H. Mills, repairs, sec. 11...	9,382 43	
81. Hewes & Hilton, raising, repairing and protecting towpath on the Tonawanda creek	28,373 96	
94. Wm. H. Douglas, repairs sec. 14..	12,178 82	
95. John C. Hunt, repairs, sec. 10....	10,167 22	
88. Langham & Loomis, building walls sec. 265 Rochester, and straight- ening tow path on 270.....	663 00	
101. B. & J. Carpenter, culvert at break near Robinson's, 4 miles east of Rochester.....	3,934 94	
102. H. N. Hewes, repairing and finish- ing break on sec. 13, four miles east of Rochester.....	8,991 08	
105. Henry F. Cady, constructing waste culvert Cady's dock at Lockport	1,592 64	
106. Francis Hutchins, repairs sec. 13..	4,164 96	
107. Kellogg & Ketchum, constructing ditch on section 213.....	248 66	
108. Edward A. Perkins, stop gates on sections 266, 321, 334.....	5,474 00	
		93,433 38

LAND DAMAGES.

1861.

March 6. George Shoecraft, Perinton, Monroe Co.,...	647 52
Total amount expended by Hiram Gardner, Canal Commissioner on the Erie canal	\$102,477 06
Total amount expended on the Erie canal.....	<u><u>\$257,368 01</u></u>

(B.)

CHAMPLAIN CANAL.

Vouchers rendered by Charles H. Sherrill, Canal Commissioner, for payments made by him.

CONTRACTORS.

No. 11. Pringle & Gibbs. combined lock, Whitehall	\$239 61
Total amount expended by Charles H. Sherrill, Canal Commissioner, on the Champlain canal..	<u>\$239 61</u>

Vouchers rendered by Wm. I. Skinner, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct. 1. Joseph Potter, services as coun- sel	\$20 00
1. Henry Collar, labor, Bassett's lock	54 00
1. Wm. Telfair, labor, Bassett's lock	14 00
1. Michael Shean, do do	17 00
1. Jason Wilcox, team, do	33 00
1. Nathan Welch, do do	36 00
1. Geo. Leggett, carpen'r, do	28 88
1. David Follett, do do	32 00
8. A. M. Martin, smithing, do	5 34
8. John McGovern, labor do	42 75
8. Mathew Lynch, do do	42 00
8. Abram Myers, do do	36 75
8. Rob't Johnson, foreman, do	147 00
8. John Mahoney, labor, do	50 62
9. J. Conway, smithing, do	15 34
22. Michael Shehan, labor, do	38 00
22. Nathan Welch, team, do	114 00
22. Wm. Telfair, labor, do	38 00
22. Jason Wilcox, team, do	6 00
Carried forward	<u>\$770 68</u>

	Brought forward	\$770 68
1860.		
Oct.	22. Henry Challer, foreman Bas- sett's lock	76 00
	23. James H. Sherrill, stone for Bas- sett's lock	400 00
	31. Robert Johnson, foreman Bas- sett's lock	81 00
	31. John Harris, labor	18 00
Nov.	3. Sidney Seeley, stone for Bas- sett's lock	1,130 77
	3. Wm. Van Keuren, rent of quarry	250 00
	3. Sidney Seeley, labor and de- livering stone	262 90
	3. Ward & McVickar, steam pile driver	1,200 00
Dec.	3. F. S. Hagadorn, printing	29 92
	11. Comstock & Cassidy, printing ..	29 92
	17. Robert Jackson, inspector Bas- sett's lock	78 00
	28. Cook & Gates, legal services ..	25 00
1861.		
Jan.	3. Robert Johnson, inspector Bas- sett's lock	78 00
	9. E. D. Baker, publishing notice ..	15 67
	28. S. Vandenburg, raising bridges	40 00
	29. George P. Moore, use and occu- pation of land, Fort Ann, Washington county	75 00
	29. A. Boughten, use and occupa- tion of land, Fort Ann, Wash- ington county	150 00
	29. Daniel McElwain, 304 loads clay	38 00
	29. D. Wetzel, temporary occupa- tion of land, Fort Ann, Wash- ington county	50 00
	31. H. G. Crouch, printing notice ..	12 82
	31. James Sherril, toll on stone ...	44 80
	Carried forward	\$4,856 48

	Brought forward.....	\$4,856 48
1861.		
Feb.	4. Robert Johnson, inspector Bassett's lock.....	78 00
	20. George P. Moore, commutation for bridge.....	500 00
	28. J. M. Smith, bill of cement....	85 50
	28. Lydia Parde, temporary occupation of land, Whitehall....	80 00
Mar.	12. George Tucker, merchandize for superintendent in 1853	34 50
	15. Weed, Dawson & Co., publishing notice	29 93
	15. H. G. Crouch, publishing notice	9 00
April	1. R. Johnson, inspector Bassett's lock	150 00
	8. John Carrington, office rent for superintendent in 1852	55 00
	27. Lemon Barrett, clerk of superintendent in 1852-3.....	20 00
May	7. John Mathews, tools.....	7 89
	7. Ira Bartlett, tools	5 25
	7. G. H. Classen, tools.....	2 00
	7. Wrouth, tools and lumber	60 18
	7. W. P. Fink, lumber.....	1 30
	7. C. S. Moore, tools	6 75
	7. C. S. Wheeler, merchants' bill..	71 30
	7. W. P. Bliss, merchant's bill ...	38 50
	7. W. P. Ostrander, lumber.....	15 50
	7. W. H. Farman, merchant's bill	29 07

1861. May 15.

H. H. Andrews, check roll for April taking out rock on berm bank on 16-mile level:

H. H. Andrews, foreman	\$24 00
Wm. Ensign	11 25
Thomas Miller.....	1 25
John Cavanough, blaster	18 75
James Mars	10 50

Carried forward	\$65 75	\$6,136 15
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Brought forward.....	\$65 75	\$6,136 15
1861, May 15.		
Charles Fenton	1 00	
John McClanen	2 50	
T. Fenton.....	8 50	
Henry Munn	6 50	
Pat Kelley.....	10 50	
Dennis Kelley	1 00	
James Welch.....	10 50	
Tim Sullivan	1 00	
M. Mully.....	10 00	
Pat Sayle	5 00	
Chas. Bushnell.....	10 00	
J. D. Leonard, jr.....	7 50	
A. Leonard.....	7 00	
John Danahan.....	7 00	
Chancy Devoe.....	7 00	
Peter Cann.....	9 50	
Thomas McBride.....	7 50	
Mic Kelley.....	2 50	
George Sannen.....	4 00	
Daniel Carnin	7 50	
A. B. Willis.....	3 50	
Thomas Cowing, Jr	7 50	
Patrick Casey	4 50	
B. McMunn	2 50	
Michael Shuke	8 50	
John Hannis	7 50	
John Harrington.....	9 50	
John McCollin.....	7 25	
W. Talman.....	10 50	
Charles Wair.....	8 50	
James Cooney	7 50	
Alexander Ives	7 50	
Charles McGowen	7 50	
John Quinn	7 50	
Thomas Flanagan.....	6 50	
A. Myner	5 00	
John Welch	9 50	

Carried forward \$312 50 \$6,136 15

Brought forward		\$312 50	\$6,136 15
1861. May 15.			
James McDernold	10 50		
Michael Fitzgibbon	6 00		
Patrick Cooney	6 00		
James Grannin	10 50		
Michael Gannen	10 50		
L. Gannen	9 25		
A. Weaven	8 50		
A. Weaven, Jr	8 50		
Thomas Corney	7 50		
Patrick Quighty	1 50		
Ed. Croonen	10 50		
James Kelley	7 50		
Patrick Lise	4 50		
H. H. Andrews, Jr	12 00		
Hugh Ganey	7 50		
Peter Bannen	8 50		
William Kelley	9 50		
			451 25
May 28. Franklin Gates, award under chapter 202, Laws 1858		24 19	
28. Charles Moore, award under chapter 202, Laws 1858		21 88	
28. Franklin Gates, old bill for labor		5 00	
28. Joseph Gates, old bill, foreman		21 00	
June 7. P. H. Bender, publishing notice		27 30	
26. Cohoes Iron Works, bill and materials		17 02	
28. James Ray, foreman Bassett's lock		48 00	
July 3. E. H. Reynolds, publish'g notice		13 20	
4. David Barrett, superintendent, (old account)		100 98	
9. E. H. Roberts, publishing notice		27 60	
10. Comstock & Cassidy, publishing notice		30 00	
10. Allen Corey, publishing notice		15 60	
Carried forward			\$6,939 17

Brought forward \$6,939 17

1861.

July 15.	S. B. Lansing, land damages, Watervliet	250 00	
19.	Weed, Dawson & Co., publish- notice	27 60	
20.	J. M. Frances, publishing notice	27 60	
Sept. 5.	Robert Johnson, toll on stone, Bassett's lock	1 43	
6.	Abner Howland, materials, Bas- sett's lock	25 09	
6.	N. Welch, team labor, Bassett's lock	3 00	
6.	R. H. Bangs, cement for Bas- sett's lock	243 60	
6.	Myron Bangs, wheelbarrows, Bassett's lock	9 00	
6.	John Black, dressing and laying stone, Bassett's lock	127 48	
7.	W. B. Coleman, laborers' fore- man, Bassett's lock	36 00	
7.	E. Benjamin, stone for coping, Bassett's lock	68 12	
7.	W. P. Ostrander, lumber for Bassett's lock	24 00	
7.	C. J. DeGraw, use of derrick at Bassett's lock	40 00	
10.	Albert Cook, team labor, Bas- sett's lock	3 00	
17.	T. G. Young, publishing	12 82	
19.	L. Alexander, land damages, Watervliet	847 00	
			\$8,684 91

CONTRACTORS.

No. 32.	George H. Peck, constructing combined locks at junction ...	\$5,432 48	
33.	John Brady, North Guard lock at Mohawk river	\$2,550 75	
Carried forward			
		\$2,550 75	\$5,432 48 \$8,684 91

Brought forward.....	\$2,550 75	\$5,432 48	\$8,684 91
No. 33. John Brady, raising banks of Champlain canal from junction to lock 1	3,629 50		
		6,180 25	
No. 35. Charles J. DeGraw, repairs sec- tion 1		5,080 09	
36. Solon Vandenberg, repairs sec- tion 3		3,166 29	
37. Anson Bangs, repairs section 2..		9,118 47	
38. Keenan & Wing, improvement of Glens Falls feeder.....		2,431 45	
39. Wm. McArthur, driving piles on 16 and 5 mile level.....		7,480 00	
41. Charles J. DeGraw, constructing waste weir at Wilbur's basin..		7,662 24	
42. Jacob Schaub, rebuilding Bas- sett's lock		12,461 00	
44. Albert G. Sage, culvert and cof- ferdam, Waterford		2,650 00	
45. Thomas Fitzgerald, constructing weigh lock at Waterford		493 00	
			\$62,155 27

ENGINEERS.

No. 34. Ogden Edward, resident engineer	\$1,700 00		
40. Wm. B. Taylor, division engineer	901 56		
43. Wm. B. Cooper, resident engineer	2,300 00		
			4,901 56

DAMAGES-

1861.

Feb. 19. Benjamin Ferris, Kingsbury, Washington Co.....	\$192 50		
19. Z. Barker, Kingsbury, Wash- ington Co.....	262 00		
19. O. N. Carlton, Kingsbury, Washington Co.....	198 00		
19. Horace Dibble, Kingsbury, Washington Co.....	209 00		
Carried forward.....	\$861 50	\$75,741 74	

EXPENDITURES ON CANALS.

37

	Brought forward.....	\$861 50	\$75,741 74
Feb.	19. D. Doubleday, Kingsbury, Washington Co.....	170 00	
	19. Chas. Ferris, Kingsbury, Wash- ington Co.....	234 00	
	19. Bridget Galiher, Kingsbury, Washington Co.....	71 50	
	19. S. Hallock, Kingsbury, Wash- ington Co.....	194 00	
	19. Wm. Henry, Kingsbury, Wash- ington Co.....	143 00	
	19. Pat McIntyre, Kingsbury, Washington Co.....	115 00	
	19. Michael Minton, Kingsbury, Washington Co.....	244 40	
	19. Jacob Miller, Kingsbury, Wash- ington Co.....	213 00	
	19. John Miller, Kingsbury, Wash- ington Co.....	344 00	
	19. R. C. Oatman, Kingsbury, Washington Co.....	35 00	
	19. Jas. Powers, Kingsbury, Wash- ington Co.....	141 50	
	19. C. Rodgers and S. Middleton, Kingsbury, Washington Co...	127 00	
			\$2,893 90
Total amount expended by Wm. I. Skinner, Canal Commissioner, on the Champlain canal.....			
			\$78,635 64
Total amount expended on the Champlain canal....			
			\$78,875 25

(C.)

ERIE CANAL ENLARGEMENT.

Vouchers rendered by Charles H. Sherrill, Canal Commissioner, for payments made by him.

CONTRACTORS.

No.		
500.	L. L. Lowell :	
	Section No. 58	\$765 00
535.	Donaldson & Reynolds :	
	Section No. 62	782 00
		\$1,547 00

DAMAGES.

Henry S. Bardick, Verona, Oneida co...	\$108 00	
Jackson Covell, Vienna, Oneida co.....	56 00	
James Rant, Vienna, Oneida co.....	107 00	
Patrick Rant, Vienna, Oneida co.....	25 00	
Neriah White, Rome, Oneida co.....	69 00	
Caleb Budlong, Frankfort, Herkimer co..	200 00	
John Hulser, Frankfort, Herkimer co....	300 00	
Charlotte Kast, Frankfort, Herkimer co..	200 00	
		1,065 00

Total amount expended by Charles H. Sherrill, Canal Commissioner, on the Erie canal enlargement \$2,612 00

Vouchers rendered by William I. Skinner, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.		
Sept.	3. E. H. Roberts, printing blanks.	\$5 50
	28. J. M. Gregory, publishing notice	17 32
1861.		
Jan.	7. Weed, Parsons & Co., printing	230 34
	24. Booth Bros., rent of dock for stone	275 00
	Carried forward	\$528 16

	Brought forward.....	\$528 16
Jan.	29. Moses Benzee, land damages, Minden, Montgomery county.	55 00
	29. H. A. Erwin, constructing fence, Minden, Montgomery co.	50 00
	29. Lucy Ann and Eliza Curtis, occupation of land, Canajo- harie, Montgomery co.....	93 50
	26. George W. Wheeler, occupa- tion of land, Minden, Mont- gomery co	128 00
	29. John Temple, removing build- ings, Newville, Oneida co.....	75 00
	29. Charlotte Kast, removing build- ings, Frankfort. Herkimer co..	200 00
	29. John A. Green, earth for bridge	44 25
	29. Catherine De Forrest, digging lands, Danube, Herkimer co..	75 00
	29. David Devendorf, use and occu- pation of lands, Mohawk, Her- kimer county.....	84 75
	29. Sophia Smith, removing build- ings, Mohawk, Herkimer co..	540 00
	31. M. J. Stewart, administrator, land damages, Tribes Hill, Montgomery county	342 34
Feb.	9. N. P. Casler, occupation of land, Little Falls, Herkimer co	119 00
	9. E. Vaneps, occupation of land, Glen, Montgomery county ...	101 87
	9. A. W. Yates, occupation of land, Fultonville, Montgomery county	364 50
	9. Robert Adams, occupation of land, Minden, Montgomery co.	192 50
March	7. S. Rankin, land damages, Little Falls, Herkimer county	350 00
	12. S. & R. Earl, counsel fees, diversion of waters, Mohawk river	300 00
	Carried forward.....	<u>\$3,643 87</u>

Brought forward	\$3,643 87	
March 12. S. & Earl, counsel fees, diversion of waters, Little Falls...	50 00	
12. S. & R. Earl, counsel fees, diversion of waters, Rome...	50 00	
12. B. Gardiner, land damages, Glen, Mont. county	131 00	
1861. May 3.		
P. G. Potter, check roll for March, excavation lock 39.		
C. Van Alstyne	\$13 00	
N. Wilcox	13 00	
A. J. Eysaman	12 50	
T. Kennedy	13 00	
Thomas Lahey	13 00	
William Carter	75	
Nicholas Carter	75	
P. Casey	75	
J. Roarke	75	
P. E. Rankin, carpenter	2 62	
James Churchill, team	6 25	
Mary M. Gage, team	2 50	
James Levi	3 75	
		82 62

1861. April.		
P. G. Potter, check roll for April, excavation lock 39.		
C. Van Alstyne	\$22 50	
N. Wilcox	6 50	
J. Mitchell	16 25	
A. J. Eysaman	11 00	
Thomas Kennedy	5 50	
T. Lahey	22 50	
P. E. Rankin, carpenter	11 37	
N. Lynch	3 50	
Jacob E. Casler	2 50	
H. Smith	2 50	
H. Van Alstyne	8 75	
Joseph Casler	7 75	

Carried forward \$120 62 \$3,957 49

Brought forward.....	\$120 62	\$3,957 49
John Shepard	\$2 50	
P. Gleason.....	12 00	
W. H. Perry	5 00	
John Fitzpatrick.....	12 50	
James Sixbury	2 25	
Thomas Kennedy, 2d.....	6 00	
Gre Flynn	1 00	
R. Harden	2 00	
James Levi, team.....	5 00	
A. K. Van Allen.....	2 50	
Alfred Casler.....	2 50	
Timothy O'Brien.....	1 00	
John Shepard	2 00	
A. H. Fink, team.....	1 25	
James Churchill, team.....	12 50	
Samuel Shell, boss plaster.....	18 00	
B. Sheridan.....	8 00	
Dan Crouly	7 50	
Peter Riley	7 50	
J. Mansfield.....	1 00	
M. Kennedy.....	1 00	
Dan O'Brien	1 50	
		235 12

1861.

May 3. P. E. Rankin, lumber bill.....	39 32
4. D. & E. Reed, merchant's bill...	4 45

May 9.

F. Cretzer's check roll, removing benches
between locks 40 and 41.

Fred. Cretzer, foreman.....	26 00
John Hogan.....	17 00
August Arabia	17 50
P. Helmer	17 50
N. Zoller	2 00
W. Dygert.....	17 50
John Steel.....	5 00
Fred Osendorf.....	11 25
Henry House.....	12 50

Carried forward..... \$126 25 \$4,236 38

Brought forward.....	\$126 25	\$4,236 38
John Critzer.....	17 25	
J. Banon.....	5 50	
A. Staring.....	10 25	
John Wetzell.....	9 75	
J. W. Helmer.....	16 75	
M. Van Slyke, team.....	15 00	
D. Orendorf.....	7 50	
James Churchill.....	10 00	
		218 25
G. Campbell's check roll, removing benches between locks 44 and 45.		
Gaylord Campbell, foreman....	\$19 50	
E. Sterling.....	3 00	
H. Barge.....	4 75	
P. Moran.....	1 50	
L. Farman.....	13 75	
Ira Pickens.....	11 75	
Edward Hotaling.....	9 25	
Abraham Petrie.....	4 75	
M. Ingersoll.....	4 50	
J. H. Folts.....	50	
H. M. Marshall.....	75	
Andrew Hotaling.....	1 50	
John Gilligan.....	1 00	
P. W. Hotaling.....	6 25	
James Churchill.....	2 50	
John H. Foltz.....	26 87	
		112 12

1861.

Mar. 10. H. W. Bridenbecker & Co., lumber bill.....	3 05
15. H. K. Keller, mechanics' bill..	1 00
16. McChesney & Co, do ..	13 09
20. J. Bowyer, materials and labor	13 46
20. S. Sherman, lumber bill.....	14 37
20. W. B. Houghton & Son, lumber bill	23 34
20, Geo. Ashley, merchants bill...	13 69
Carried forward.....	\$4,648 75

EXPENDITURES ON CANALS.

43

	Brought forward.....	\$4,648 75	
June	7. P. H. Bender, old bill printing	18 40	
	8. J. M. Phillips, commutation canal bridge.....	1,200 00	
	8. Abraham Starrin, commutation canal bridge.....	1,200 00	
July	1. W. R. Young, damages Port Jackson, Mantgomery county	348 00	
	1. W. Powell, Frankfort, Herkimer county	246 50	
Aug.	9. A. Freeman, Schenectady.....	60 00	
	28. J. Myers & Co. raising berm bank, Illion	75 00	
	28. S. A. Waterman, foot bridges, Schenectady.....	98 90	
Sept.	19. R. J. Skinner, damages, Verona, Oneida county.....	350 00	
			8,245 55

MISCELLANEOUS DRAFTS.

1861.

June	20. John F. Hosch, enlargement work on repair section 4,....	\$949 19	
July	1. John McDonald, enlargement work on repair section 3....	1,227 52	
	2. Wm. McClary, enlargement w'k on repair section 2.....	1,018 03	
Aug.	15. John F. Hosch, enlargement work on repair section 4.....	806 96	
			4,001 70

ENGINEERS.

No.			
502.	Wm. B. Taylor, division engineer..	\$2,140 02	
503.	Ogden Edwards, resident, engineer..	7,123 51	
764.	Wm. B. Cooper, resident engineer..	4,750 00	
			14,013 53

CONTRACTORS.

483.	S. & G. Adams, section No. 117..	\$5,714 92
500.	L. L. Lowell, Olstrona Aqueduct...	3,112 95
509.	J. S. M. Barhydt, sections No. 41 to 44.....	6,528 00

Carried forward\$15,355 87 \$26,260 78

Brought forward.....		\$15,355 87	\$26,260 78
No.			
547.	Wm. Spoonenbergh & Co., section No. 78 and section No. 2 of Rocky Rift feeder.....	10,129 89	
684.	John Hutchinson, iron superstruc- tures for bridges at Whitesbo- ro, Stanwix, New London, &c.....	3,203 92	
686.	Holmes, Harbottle & Co., sections 45, 46 and 47,.....	7,114 50	
714.	Silas L. King, bridge abutments on sections 33 and 35.....	3,816 50	
760.	S. V. Trull, raising bridges on sec- tions 1 and 2.....	6,987 00	
761.	Elisha W. Hopkins, raising bridges on sections 3, 4 and 5.....	9,520 00	
762.	Wm. McArthur, comple- tion of the enlargement from west end of section 47 to lock 29.....	\$6,060 50	
	Bottoming out canal above lock 34,.....	14,220 50	
	Bottoming out below lock 42, and raising banks on section 127....	1,751 00	
			22,032 00
768.	Eli T. Bangs, bottoming out canal through Utica.....	9,790 00	
769.	Harman Van Slyck, bottoming canal and raising banks from lower Mohawk aqueduct to sec. 27.....	8,380 00	
770.	Joseph Boyer, raising banks on sec. 83 and 84, and bottoming out section 84.....	1,400 00	
775.	George Heath, building superstruc- ture for iron bridge, State-st., Schenectady	3,861 50	
776.	Charles T. Baldwin, raising banks between lock No. 18, and lower Mohawk aqueduct.....	7,895 00	
Carried forward			\$109,486 18

LAND DAMAGES.

Martin Wager, Verona, Oneida county,...	\$701 10
Hiram Agan.....	156 00
Solomon Rathbone.....	253 50
P. J. M. & S. Marcellus, Schenectady...	160 74
Elisha A. Clark, Whitestown, Oneida Co.	1,846 00
Parker Penfield, Whitestown, Oneida Co.	284 00
	\$3,401 34

Total amount expended by William I. Skinner, canal commissioner on the Erie canal enlargement..... \$139,148 30

Vouchers rendered by John M. Jaycox, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct. 15. John C. Hunt, disbursement as counsel before Canal Appraisers.....	10 00
27. C. Fairchild, publishing notice to contractors.....	10 80
31. Wm. V. Bruyn, services as counsel before Canal Appraisers..	225 00
Nov. 19. Denison & Fisher, publishing notice to contractors.....	8 40
20. E. F. Loveridge, publishing notice to contractors.....	27 60
22. C. Franchill, publishing notice to contractors.....	10 80
Dec. 6. Comstock & Cassidy, publishing notice to contractors.....	22 80
17. M. L. Hickox, publishing notice to contractors.....	10 80
19. D. J. Halstead, publishing notice to contractors.....	25 20
19. W. S. McCollum, publishing notice to contractors.....	25 20
19. R. M. Griffin & Co., publishing notice to contractors.....	25 20
Carried forward.....	\$401 80

EXPENDITURES ON CANALS.

Brought forward.....	\$401 80	
1860.		
Dec. 19. Nancy Torrey, moving build- ings, sections 203 and 204....	117 81	
19. Alfred Bruen, earth for sections 203 and 204.....	316 00	
19. D. Helmer, earth for sections 203 and 204.....	65 00	
19. Thomas Smith, damages to land, sections 203 and 204.....	300 00	
19. C. J. Case, damages to land, sections 205 and 206	31 66	
		1,232 27
ENGINEER.		
No.		
511. Henry Van Vleck, division engineer	\$415 52	
		415 52
CONTRACTORS.		
697. Dimick & Collins, section 204	\$2,686 00	
717. Myron Bangs, west half of sec. 203..	1,870 00	
751. Elliot Harroun, removing old tow path bridges across Seneca river, and dredging channel.....	11,555 00	
754. McCann & Arnold, culvert at Weeds- port	1,214 69	
		17,325 69
DAMAGES.		
Jas. H. Childs, Sullivan, Madison county	\$770 00	
		770 00
Total amount expended by John M. Jaycox, Canal Commissioner, on the Erie canal enlargement	\$19,743 48	
<i>Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.</i>		
MISCELLANEOUS.		
1861.		
Jan. 18. Gaylord J. Chase, publishing notice to contractors	\$25 20	
April 3. Ellis H. Roberts, publishing notice to contractors.....	25 20	
Carried forward	\$50 70	

EXPENDITURES ON CANALS.

47

Brought forward.....	\$50 70	
1861.		
April 3. James N. Brown, publishing notice to contractors	25 20	
3. Comstock & Cassidy, publishing notice to contractors	24 22	
11. Comstock & Cassidy, publishing notice to contractors	32 77	
4. Seneca Lake, publishing notice to contractors	12 82	
5. W. T. Tinsley, publishing notice to contractors	13 20	
5 Seneca Lake, publishing notice to contractors	10 80	
5. J. H. Smith, publishing notice to contractors	12 82	
22. John Crawford, publishing notice to contractors	10 80	
23. John Crawford, publishing notice to contractors	14 85	
23. F. A. Darling, publishing notice to contractors	10 80	
July 19. Weed, Dawson & Co., publishing notice to contractors....	25 20	
19. Weed, Dawson & Co., publishing notice to contractors	29 93	
23. Ralph H. Avery, damages, Lennox, Madison county.....	30 00	
Aug. 23. D. B. Smith, gravel at Port Byron	203 76	
31. H. K. W. Bruce, attorney fees before Appraisers	70 00	
Sept. 13. Susan Main, damages, Camillus, Onondaga county	50 83	
		628 40
MISCELLANEOUS DRAFT. •		
Mar. 2. Lewis Selye, increased cost in raising banks on repair section No. 8.....	\$4,588 53	
		4,588 53
Carried forward		\$5,216 93

EXPENDITURES ON CANALS.

Brought forward..... \$5,216 93

ENGINEERS.

No.			
511.	Henry Van Vleck, division engineer	519 28	
731.	M. S. Kimball, resident engineer...	5,600 00	
			\$6,119 28

CONTRACTORS.

571.	Haight & Butler, section 144.....	\$3,123 85	
696.	O'Connor & Sullivan, section 206 ..	2,356 76	
697.	Dimick & Collins, sec. 204	3,026 00	
717.	Myron Bangs, west $\frac{1}{2}$ of sec. 203 ...	10,931 00	
750.	W. H. Bennett, sec. No. 144.....	1,921 00	
751.	Elliot Harroun, removing old tow- path bridge across Seneca river, and dredging channel.....	3,500 00	
765.	Arnold & Wiles, raising bridges on repair sections Nos. 7, 8 and 9...	6,205 00	
771.	Brazel & McCann, raising bridges on repair sections No. 7 and 8.....	6,630 00	
772.	N. S. Gere, raising bridges on repair sec. No. 9.....	2,210 00	
773.	DeGraw & Wood, constructing De- Ruyter reservoir.....	24,820 00	
			64,723 61
	Lewis Selye, enlargement work on repair section 8.....	\$17,374 00	
	James J. Belden, enlargement work on repair sec. 9	18,048 64	
	Thomas Gale, enlargement work on repair sec. 7.....	21,321 25	
			56,743 89

Total amount expended by Benjamin F. Bruce, Canal
Commissioner, on the Erie canal enlargement. \$132,803 71

*Voucher rendered by the late Samuel S. Whallon, Canal Com-
missioner, for payment made by him.*

CONTRACTORS.

No.			
752.	Moore & Harrington, bridge abut- ments on sections 284 and 310 ...	\$102 00	
			\$102 00

Total amount expended by the late Samuel S. Whallon, on the Erie canal enlargement..... \$102 00

Voucher rendered by Charles H. Sherrill, Canal Commissioner, for a payment made by him on the western division of the Erie canal enlargement after the decease of Samuel S. Whallon.

CONTRACTORS.

No.

622. Moore, Harrington & Tousley, section No. 292..... \$340 00

Total amount expended by Charles H. Sherrill, Canal Commissioner on the western division of the Erie canal enlargement..... \$340 00

Vouchers rendered by Hiram Gardner, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct.	5. Curtiss, Butts & Co., publishing notice	\$37 80
	5. Weed, Dawson & Co.....	41 40
Nov.	1. John Grotten, temporary occupation of land	10 00
	10. W. T. Tinsley, printing.....	3 50
	26. R. Babcock, raising warehouse, &c.....	350 00
	26. C. Richardson, removing warehouse, &c.....	75 00
Dec.	4. Daniel Wood, removing spoil bank on sec. 258	82 50
	14. Thomas Goodsell, attendance on Canal Appraisers.....	6 00
	13. Frank Williams, attendance on Com'rs, case of T. D. Barton	234 00
	17. Comstock & Cassidy, printing.	28 35
	20. John Green, abutments to road bridge sec. 2, east of Roch'r	166 98
	20. Edward Burns, temporary occupation of land	50 00
	Carried forward.....	\$1,085 53

Brought forward.....		\$1,085 53
1860.		
Dec.	20. Lawrence Powers, temporary occupation of land	20 00
	20. B. M. Hanks, counsel for State, before Canal Appraisers	40 00
	22. R. Baker, gravel for lining to culvert	50 00
	29. Douglas, Bolt & Co., taking down and rebuilding smoke pipe	155 00
1861.		
Jan.	28. R. M. Griffin & Co., publishing notice to contractors	29 92
Feb.	26. D. J. Halsted, publishing notice	33 07
March	1. Comstock & Cassidy, publishing notice	33 07
	16. James P. Horton, temporary occupation of land	17 60
	21 A. M. Clapp & Co., publishing notice	29 92
April	5. Weed, Dawson & Co., printing.	28 35
	5. P. H. Bender, printing.....	34 50
	22. Curtis, Butts & Co., printing..	58 27
	22. Comstock & Cassidy, printing..	34 50
May	2. A. Snedeker, gravel pit on section 213	400 00
	31. Thomas Henderson's check roll for labor on sections No. 271, 282, and Genesee river feeder during the month of March and April, 1861 :	
	Thomas Henderson, foreman...	\$22 32
	James Costello, foreman.....	19 19
	Andrew Sullivan.....	21 00
	John Gallagher.....	17 40
	William Lewis.....	18 25
	Eugene Sullivan	18 25
	Richard Paterson	1 00
Carried forward		\$117 41
		\$2,049 73

Brought forward.....	\$117 41	\$2,049 73
1861. May 31.		
John Whalen.....	12 50	
John Gragen.....	3 25	
Patrick Burns.....	15 75	
Martin Higgins.....	20 00	
Dominick Gallaher.....	16 25	
Patrick Clark.....	13 25	
Thomas Melvin.....	50	
Thomas Skuse.....	20 25	
Patrick Kavanagh, mason.....	19 00	
Lewis Wilson.....	21 00	
Martin Golden.....	7 00	
Dennis Behan.....	16 25	
James Calligan.....	11 75	
Thomas Kendred.....	5 50	
William Love.....	11 50	
Richard Varien.....	11 00	
John Hanofy.....	7 25	
John Heenan.....	13 25	
John M. Call.....	9 50	
Mathew Quinn.....	11 25	
William O'Brien.....	14 75	
Daniel Rariden.....	2 00	
Daniel Harrington.....	9 25	
Benjamin Healy.....	15 75	
Patrick McCue.....	3 50	
Patrick Donoghue.....	10 00	
Michael Bryan.....	10 00	
Peter Hogan.....	50	
Michael Connors.....	10 75	
Hugh O'Connor.....	1 00	
James Canah.....	7 75	
Michael Johnson.....	1 00	
Danley Hanly.....	4 50	
Michael Kelly.....	1 00	
Daniel Kennedy.....	10 25	
Hugh McGovern.....	1 00	
Patrick Hadican.....	8 75	
Carried forward.....	\$475 16	\$2,049 73

Brought forward	\$475 16	\$2,049 73
· 1861. May 31.		
Timothy Connors	9 50	
Thomas Hitchcock	12 50	
Thomas Moore	6 75	
James Cane	10 25	
Charles Godfrey	1 00	
Charles Hill	1 00	
Patrick Hanan	4 25	
Patrick Glavin	2 00	
M. Sherbert	3 00	
Joseph Green	4 00	
A. Eaton	1 00	
Dennis Cotter	3 25	
Rudolph Lusher, blacksmith ..	9 45	
D. McGarry, wheelbarrow bill ..	32 00	
Geo. A. Maurer, powder and fuse	27 15	
Alfred C. Dodge, labor performed	59 60	
		661 86

May 31.

J. Nelson Tubbs, check roll for work done
on sections 259, 260, 261, and 262 :

Christopher Supener	\$35 00	
Dennis McMahan	12 00	
George Ashdoun	9 50	
Patrick Flanagan	11 00	
John M. Crystal	7 75	
John Nicholson	1 50	
Patrick O'Brien	14 50	
William Ross	13 00	
Michael Cochein	12 50	
Adam Vogler	7 00	
James Walsh	5 75	
Andrew Laydon	81	
Augustus Batke	13 25	
Thomas Plant	4 00	
Fred. Arvons	15 00	
August Miller	8 00	
Stephen Riley	15 00	
John Daring	4 50	

Carried forward	\$190 06	\$2,711 59
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Brought forward..... \$150 06 \$2,711 59

1861. May 31.

Thomas Kelley	8 00	
Edmund Cahill	12 50	
David O'Heden	13 50	
Michael Lighthart	9 50	
Michael Heavy	15 00	
Daniel Kingsley	5 00	
Thomas Lary	9 25	
James Leiro	1 00	
Thomas McNolte	3 00	
John Caley	36 00	
Henry Singmaster	15 50	
R. L. Howe, tools, &c.,	56 49	
William McIntosh	36 00	
Paul Donovan	12 00	
John Callahan	16 25	
Daniel Smith	14 00	
Joseph Borea	12 50	
John Gibson	15 00	
Francis Channon	2 00	
John Brown	2 00	
Francis O'Brien	15 00	
John Fogerty	4 50	
Michael Tearney	10 75	
Barney McGuire	13 00	
Edward Costello	12 00	
John Dougherty	6 50	
Frank McLean	6 50	
James Doyle	2 00	
Thomas Skilicom	10 50	
Michael Welsh	11 00	
		576 30
May 17. L. M. Loss, enlargement work on repair section 12		2,227 70
17. Alfred C. Dodge, enlargement work on repair section 11 ...		3,840 15
31. Jarvis Lord, bottoming out canal through county of Wayne...		5,083 87
Carried forward		\$14,439 61

Brought forward.....		\$14,439 61
1861.		
June	6. Richardson & Freeman, printing	33 07
	15. A. Strong & Co., printing.....	61 42
	15. P. H. Bender, printing	16 15
	24. J. Lord, raising bridges at Lyons	268 13
	27. B. M. Hanks, counsel fees.....	60 00
	27. Richardson & Freeman, printing	10 50
July	16. John D. Fay, witness, &c., in T. D. Barton's claim.....	247 92
	16. A. C. Dodge, enlargement work on repair section No 10	287 00
	16. Thomas Dunbar, dredging on repair section 360	70 00
July	22. Hinman & Lewis, building dam, section 10, Mountain Ridge..	397 50
	23. Francis Hitchins, excavating bottom of canal in April....	340 00
Aug.	1. E. R. Jewett, printing.....	55 57
	3. G. D. Lamont, counsel for State	53 24
	19. O. Fisk, removing building....	10 00
	30. Haven & Dorsheimer, counsel for State.....	150 00
	30. Daniel Richmond, expenses of witnesses	10 00
Sept.	7. S. B. Moore, estimating cost of cutting off building	4 00
	12. Richardson & Barker, printing	5 75
	14. W. W. Miller, raising iron bridge section 8, Mountain Ridge...	40 25
	14. S. Zimmerman, rebuilding fence	7 00
	17. G. D. Lamont, counsel for State	22 54
	17. Wm. H. Douglas, cutting sluice under tow-path, Tonawanda creek.....	31 38
	17. Wm. H. Douglas, dredging in Buffalo, section 14	964 50
	17. Richardson & Barker, printing.	26 77
		\$17,612 30
Carried forward.....		\$17,612 30

Brought forward \$17,612 30

ENGINEERS.

No.			
710.	Ensign Bennett, resident engineer	\$8,600 00	
718.	Daniel Richmond, do	9,100 00	
743.	W. J. Keeler, do	6,718 42	
759.	Orville W. Storey, division engineer	1,745 05	
			26,163 47

CONTRACTORS.

445.	Ryan & Aiken, section 8, M. ridge.	\$6,825 00	
446.	Anthony & Ennis, sec. 10, Mountain ridge.....	1,933 00	
448.	Orson Tousley, sec 9, M. ridge.	10,750 00	
449.	C. T. Chamberlain:		
	Sec. 6, Mount. ridge	\$1,368 00	
	Sec. 7, do	5,446 00	
	Sec. 324, do	5,228 60	
			12,042 60
457.	Ennis & Leach, section at Medina	3,066 98	
577.	Myron H. Mills:		
	Sec. 364	\$15,929 00	
	Secs. 252 and 257..	4,182 00	
			20,111 00
595.	Hayes & Rigney, sec. 335.....	1,121 31	
604.	Ira Mirick, sec. 244.....	854 03	
613.	A. G. & J. A. Rose, stop gates on sec. 318	1,103 14	
624.	McArthur & Dodge, sec. 233....	984 51	
628.	Bernard McMullen, sec. 262.....	564 00	
638.	George W. Peck, sec. 289.....	6,698 00	
639.	Dunn & Smith:		
	Sec. 252.....	\$270 00	
	Sec. 246	1,115 33	
			1,385 33
641.	Gideon Hard, sec. 249.....	8,943 00	
705.	William H. Douglas:		
	Excavating channel,		
	sec. 348 to 359 ..	\$11,475 00	
	Excavating channel,		
	sec. 361 to 366 ..	10,506 00	
			21,981 00
	Carried forward	\$98,362 90	\$43,775 77

	Brought forward	\$98,362 90	\$43,775 77
No.			
706.	Phillips & McGurk:		
	Sec. 208	\$979 75	
	Sec. 210	1,342 01	
			2,321 76
711.	John Hutchinson:		
	Iron br. supers. on		
	secs. 310 to 326...	\$479 97	
	Secs. 264 to 275 ...	256 00	
			735 97
712.	Charles H. Moore & Co., sec. 207.	13,905 00	
732.	Gilbert Peterson:		
	Waste wiers on sec.		
	210	\$816 00	
	Waste wiers on sec.		
	232	1,904 00	
			2,720 00
742.	Lewis Selyea, Erie basin and slips		
	in the city of Buffalo	20,740 00	
745.	Kingsly & Knapp, sec. 337	5,784 41	
746.	John Dunn, secs. 286 and 292 ...	480 45	
752.	Moore & Harrington, bridge abut-		
	ments on secs. 284 and 310	1,704 92	
753.	William McArthur:		
	Excavating channel,		
	sec. 211	\$5,627 00	
	Bridge abuts. for a		
	road br. east side		
	of sec. 207, &c.	337 47	
			5,964 47
758.	Green & O'Brien:		
	Secs. 259 to 262	\$6,137 00	
	Secs. 271 to 282	1,394 00	
			7,531 00
763.	Richard L. Howe, sec. 2, east of		
	Rochester	8,670 91	
766.	M. & J. McCarty, secs. 316, 320,		
	321 and 324	4,301 00	
767.	Osborn, Danolds & Kerr, secs. 361,		
	362, 363, 365 and 366	10,370 00	
	Carried forward	\$183,592 79	\$43,775 77

Brought forward \$183,592 79 \$43,775 77

No.

774. Samuel Swartz, abuts, and iron superstructure of a bridge, Louisiana street, Buffalo \$2,873 00

186,465 79

DAMAGES.

John A. Davenport, Arcadia, Wayne co	\$239 40
Clark Mason, do do	293 75
Grant Ford, do do	100 00
George Rapprecht, do do	280 61
Lewis P. Lusk, do do	171 00
Benj. Church, do do	370 50
D. P. Bostwick, do do	88 12
E. W. Lord, do do	160 00
James D. Ford, do do	325 00
Jacob Hinds, Tonawanda, Erie county.	256 50
Lyman Hawley, Pendleton, Niagara co.	503 11
Morris Grinnel, Arcadia, Wayne county	151 25
John Saner, Buffalo, Erie county	181 50
A. F. Cressy, ex. &c. Arcadia, Wayne co	392 86
O. L. Millard, Lockport, Niagara co...	509 00
Lucinda Fish, Pendleton, do ...	571 52
Isaac H. Brower, Barre, Orleans co....	100 00
C. H. Holmes, do do	205 70
Theodore Close, do do	121 00
F. H. Barry, Geneva, Monroe county..	399 00
A. F. Brainard and others, Sweden, Monroe county	1,136 00
G. B. Whiteside and others, Sweden Monroe county	907 50
G. B. Whiteside and others, Sweden, Monroe county	403 08
John P. Hall, Arcadia, Wayne county.	1,946 25
Jno. L. Hogeboom, Perrinton, Monroe co	100 00
James Baker, do do	508 78
W. Hunt, ex., &c., Lockport, Niagara co	210 50
Wm. Curtis, Ogden, Monroe county ...	128 00

Carried forward \$10,759 93 \$230,241 56

Brought forward.....	\$10,759 93	\$230,241 56
Marshall Woolson and others, Galen, Wayne county	\$1,566 88	
John F. Brown, Perrinton, Monroe co.	200 00	
T. W. Dickinson and others, Perrinton, Monroe county	570 00	
Joseph Wilson, Lockport, Niagara co..	479 43	
Wm. A. Lockwood, Perinton, Monroe co	72 60	
L. T. Howard, do do	504 55	
Z. Burr, do do	40 00	
L. T. & D. J. Howard, do do	813 78	
J. W. Pollock, Arcadia, Wayne county.	90 75	
John Ryan, Royalton, Niagara do	461 64	
Clarissa Maxwell, Orleans, Erie do	100 00	
P. M. Kenyon, Arcadia, Wayne do	2,623 50	
Thomas Wilson and others, Lockport, Niagara county	1,137 28	
Richard Wilson, Lockport, Niagara co	184 32	
Truman Kilborn, do do	389 80	
Stephen Young, do do	399 09	
T. Mead, do do	256 00	
B. F. Sabin, Arcadia, Wayne county	852 00	
Joseph D. Latten, Barre, Orleans do	1,085 17	
A. T. Blackmar, Arcadia, Wayne do	1,597 50	
Rockwell Stone, do do do	798 00	
Step'n K. Williams, do do do	242 00	
Sacket Valentine, do do do	568 00	
Orrin Blackmer, do do do	235 00	
M. S. Brown, do do do	293 75	
Wm. Rockfellow, do do do	912 00	
John P. Van Dusen, do do do	30 00	
Maria Kirker, do do do	40 00	
Wm. Robinson, Lockport, Niagara co..	1,930 96	
Horace Blackmer, Arcadia, Wayne co.	756 25	
S. Blackmer, by assignee, Arcadia, Wayne county	1,536 00	
Augustus Trask, Arcadia, Wayne co..	168 75	
Grace Newbury, Lockport, Niagara co.	772 40	
E. Blackmer, by assignee, Arcadia, Wayne county	68 00	
Carried forward	\$32,535 33	\$230,241 56

EXPENDITURES ON CANALS.

59

Brought forward	\$32,535 33	\$230,241 56
Phebe A. Payne, Arcadia, Wayne co..	355 00	
Fidelia Corwin and others, Arcadia, Wayne county.....	200 00	
O. P. Hoag, Niagara, Erie county.....	3,057 00	
		36,147 33
Total amount expended by Hiram Gardner, Canal Commissioner, on the Erie canal enlargement....		\$266,388 89
Total amount expended on the Erie canal enlarge- ment		\$561,138 38

(D.)

OSWEGO CANAL.

Vouchers rendered by John M. Jaycox, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct.	18.	J. W. Neilson, damages to land, procuring gravel.....	\$142 50
	18.	Lorenzo Goodwell, damages to land, procuring gravel.....	190 00
	18.	George White, damages to land, procuring gravel.....	87 50
	18.	Solomon Abbott, damages to land, procuring gravel.....	87 50
Nov.	22.	E. C. Burt, publishing notice to contractors	13 50
	22.	H. S. McCollum, publishing notice to contractors.....	31 50
Dec.	18.	D. J. Halsted, publishing notice to contractors.....	31 50
	19.	Conger & Rowe, materials repairing State scow, section No. 2.....	11 50
	19.	Ira Betts, timber and stone repairing section No. 2.....	243 33
	19.	H. H. Smith and J. O. Lee, earth for repair section No. 1,	125 00
	19.	H. D. Denison, deficiency in tools section No. 1.....	475 75
	19.	Comstock & Cassidy, publishing notice to contractors...	31 50
	19.	Comstock & Cassidy, publishing notice to contractors....	20 47
	19.	Charles Pardee, earth for section 27	150 00
	19.	Charles Pardee, earth and gravel for sections 24, 25, 26, and part of 27	20 00
Carried forward			\$1,661 55

Brought forward.....	\$1,661 55	
Dec. 19. W. J. Nelson, use of land storing materials for river lock.....	50 00	
19. R. H. Tyler, earth, &c., for sections 24, 25, 26, and part of 27.....	30 00	
19. W. G. Robinson, earth, &c. for secs. 24, 25, 26, and part 27..	325 00	
19. C. S. Osgood, earth, &c., for sects. 24, 25, 26, and part 27	40 00	
19. Darwin E. Fay, earth, &c., for sects. 24, 25, 26, and part 27	15 00	
19. James Robinson, earth, &c., for sections 24, 25, 26, and part of 35.....	200 00	
19. E. B. Talcott, earth, &c., for sections 24, 25, 26, and part of 35.....	20 00	
19. Boomer & Fish, raising and moving buildings, &c.....	127 20	
19. C. J. De Graw, building tem- porary bridge Oswego river..	461 38	
19. R. R. & N. G. Dodge, earth, &c., for sections 24, 25, 26, and part of 27.....	249 37	
19. James Green, services super- intending wall.....	96 00	
19. Joseph Pettit, earth for con- struction of mud lock.....	25 00	
		3,300 50

MISCELLANEOUS DRAFT.

Charles E. Case, Myron S. Clark, Gardner Briggs, constructing bridge across Oswego canal, act chap. 413, Laws of 1860.....	1,312 00
Carried forward.....	\$4,612 50

EXPENDITURES ON CANALS.

Brought forward.....		\$4,612 50
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ENGINEERS.

No.

49. M. S. Kimball, resident engineer..	\$1,500 00	
55. Henry Van Vleck, div'n engineer	173 30	
		1,673 30

CONTRACTORS.

3. Wm. Baldwin, lift lock		
No. 15.....	\$909 52	
Wm. Baldwin, lift lock		
No. 17.....	996 95	
Part section 31 and 32	10,225 76	
		\$12,132 23
39. G. W. Humphreys, part of sec. 18	1,402 50	
48. Denison & Avery, raising walls of		
lock No. 5.....	935 00	
54. George H. Peck, section No. 19..	5,535 20	
56. Stinson Ostrander, rep. sec. 2....	3,654 72	
57. Richard Clancy, part sec. 16 and 17	3,230 00	
58. Daniel T. Hewes, part sec. 35....	1,462 00	
62. Henry D. Denison, rep. section 1..	793 32	
66. Henry D. Denison, completing salt		
slips at Salina.....	5,000 00	
68. T. Keeler, br's on secs. 28, 29 & 31	93 50	
		34,238 47

DAMAGES.

B. Mongin, Oswego, Oswego Co.....	\$284 00	
G. Hawley & Co., exn.....	1,874 40	
John E. Lieb & Co.....	852 00	
B. Mongin.....	568 00	
		3,578 40

Total amount expended by John M. Jaycox, Canal		
Commissioner, on the Oswego canal.....		\$44,102 67

Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1861.

Mar. 15. Weed, Dawson & Co., pub-		
lishing notice.....	\$31 50	
Carried forward.....		\$31 50

Brought forward.....	\$31 50	
Mar. 20. D. J. Halstead, publishing notice.....	20 47	
27. F. D. & D. M. Koon, damages to land, Phoenix.....	75 00	
April 18. D. J. Halstead, publishing no- tice to contractors.....	25 20	
18. Wm. Patrick, moving store- house, &c.....	143 34	
July 23. L. D. Littlefield, gravel taken in 1859.....	250 00	
Aug. 22. Gerrit Smith, dam. for gravel	100 00	
22. A. P. Hart, temporary appro- priation of land.....	250 00	
22. Thomas Collison, earth dam- ages, &c.....	86 25	
22. V. Van Buren, gravel, &c....	10 00	
		991 76

ENGINEERS.

No.		
49. M. S. Kimball, resident engineer.	\$3,200 00	
55. Henry Van Vleck, div'n engineer	277 76	
		3,477 76

CONTRACTORS.

3. Wm. Baldwin, part of section 31 and 32..	\$8,750 85	
Wm. Balwin, part of section 27.....	167 47	
Wm. Baldwin, part of section 23.....	3,218 93	
		12,137 25
14. R. C. Kenyon, sec. 38	1,400 68	
16. Peter Dunn & Co., lock No. 6...	2,327 00	
35. Alanson Dodge, sec'on 24 to 26, and part of 27	11,986 25	
Part of sect. 22, 23..	1,047 26	
Part of section 27, in- cluding lock.....	9,722 47	
		22,755 98
Carried forward.....	\$38,620 91	\$4,469 52

Brought forward		\$38,620 91	\$4,469 52
No.			
36.	Thomas Gale, sect'n 6	\$2,986 23	
	Thomas Gale, section		
	7 and part of 8....	1,911 84	
	Thomas Gale, sec. 4..	1,345 21	
			6,243 28
39.	G. W. Humphreys, part of sec-		
	tion 18.....		5,994 70
48.	Denison & Avery, raising walls of		
	lock No. 5.....		4,156 27
50.	McArthur & Dodge,		
	part of sec's 21 and		
	22	\$2,582 17	
	McArthur & Dodge,		
	part of section 37..	5,301 81	
			7,883 98
53.	Sage & Ferris, part of sections		
	14 and 15		1,234 15
54.	George H. Peck, section No. 19..		1,848 35
56.	Stinson Ostrander, repair sec. 2 .		9,244 29
57.	Rich. Clancy, part sec's 16 and 17		1,375 25
58.	Daniel T. Hewes, do 35		8,111 28
59.	Darius W. King, do 20 and 21		7,805 43
62.	Henry D. Denison, repairs sec. 1..		9,024 68
65.	Myron H. Mills, part of sec. 34 ..		1,736 16
68.	Thomas Keeler, bridges on sec's		
	28, 29 and 31.....		4,580 33
69.	Wesley Eaton, construction of a		
	sluice around lock 1.....		1,575 28
70.	Driscoll, Hunt & Casey, raising		
	bridges on repair sec. No. 1....		2,461 49
71.	Brazell & McCann, raising bridges		
	on repair sec. No. 2		1,033 82
72.	Elliot Harroun, part of sec. 34...		1,972 85
			114,902 50
Total amount expended by Benjamin F. Bruce,			
Canal Commissioner on the Oswego canal...		\$119,372 02	
Total amount expended on the Oswego canal..		\$163,474 69	

(E.)

CAYUGA AND SENECA CANAL.

*Vouchers rendered by John M. Jaycox, Canal Commissioner, for
payments made by him.*

MISCELLANEOUS.

1860.

Aug. 28. James Stevenson, removing fence on sec's 3 and 4 ----	\$100 62	
28. Henry Barker, removing fence on sec's 3 and 4 -----	13 12	
28. John Stahlmicker, removing fence on sec's 3 and 4 ----	16 62	
Oct. 15. Mathew Sisson, removing fence on sec. 10 -----	124 50	
Nov. 1. G. V. Sackett, damages to land, trees, &c., and earth for sec. 10 -----	535 00	
1. Ruger & Lester, counsel fees	36 00	
		\$825 86

CONTRACTORS.

No.

17. Pringle & Claffy, sec. No. 11 -----	\$2,805 00	
16. Myers & Johnson :		
Sec. No. 1 -----	\$214 99	
Sec. No. 2 -----	201 68	
Sec. No. 3 -----	128 31	
Sec. No. 4 -----	179 16	
		724 14
24. Compson & Stokes :		
Sec. No. 6 -----	\$176 91	
Sec. No. 7 -----	210 35	
		387 26
32. George Smith & Co. :		
Sec. No. 8 -----	\$663 00	
Sec. No. 12 -----	3,672 90	
		4,335 00

Carried forward	\$8,251 40	\$825 86
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[A. 179.—S. 90.]

	Brought forward.....	\$8,251 40	\$825 86
No.			
44.	Moses E. Ludington, repair contract	\$1,012 64	
46.	Gage & Vandercook, sect'ns No. 1, 2 and 3.....	3,757 00	
48.	B. Swartwout, section No. 13	595 00	
49.	C. C. B. Walker, section No. 4....	646 00	
			14,262 04

ENGINEERS.

43.	Henry Van Vleck, division engineer	\$107 64	
50.	Wm. H. H. Gere, resident engineer	1,000 00	
			1,107 64

LAND DAMAGES.

Phoenix Co., Seneca Falls, Seneca co....	\$5,780 93	
		5,780 93

Total amount expended by John M. Jaycox, Canal Commissioner, on the Cayuga and Seneca canal..	\$21,976 47
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*Vouchers rendered by Benjamin F. Bruce, Canal Commissioner,
for payments made by him.*

MISCELLANEOUS.

1861.

Feb. 27.	Comstock & Cassidy, publish- ing notice to contractors .	\$31 50
March 8.	J. G. K. Truair & Co., pub- lishing notice	31 50
15.	Weed, Dawson & Co., publish- ing notice	31 50
April 19.	J. G. K. Truair & Co., pub- lishing notice	115 05
22.	C. D. Tracy, & Co., publishing notice	115 05
22.	E. H. Roberts, publishing notice.....	115 05
23.	Comstock & Cassidy, publish- ing notice	122 85
April 23.	Isaac Fuller, publishing no- tice to contractors.....	10 80
	Carried foward	\$573 30

	Brought forward	\$573 30	
	1861.		
May	21. J. Willcoxon, earth for Seneca river dam	100 00	
	21. J. Babcock, earth for Seneca river dam	125 00	
	21. Isaac Fuller, publishing notice	38 85	
	21. James N. Brown, publishing notice	115 05	
	21. J. M. Frances, publishing notice	115 05	
	21. Fairman & Co	25 35	
June	14. A. M. Clapp & Co., publishing notice	115 05	
	14. Wm. Stuart, publishing notice	25 35	
	14. H. D. Morris, publishing notice	25 35	
	14. Robert J. Webb, publishing notice	118 95	
May	. E. A. Taylor's check rolls of labor and bills of material on sec. 11, charged to contractors, Pringle & Claffy ..	2,297 98	
July	3. R. M. Griffin & Co., publishing notice	25 35	
	19. Weed, Dawson & Co., publishing notice	122 85	
	19. Peter Teller's check rolls of labor charged to Pringle & Claffy	193 03	
Aug.	30. J. B. Look, publishing notice	13 50	
	30. A. Teal, gravel	7 80	
	30. Swartwout & Fitzgerald, use of dredge	156 75	
			4,194 56
	Carried forward		\$4,194 56

Brought forward.....	\$4,194 56
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ENGINEERS.

No.

43. Henry Van Vleck, division engineer	\$191 82	
50. Wm. H. H. Gere, resident engineer	3,700 00	
		3,891 82

CONTRACTORS.

No.

16. Myers & Johnson, award chapter 520, Laws of 1860	\$6,673 00	
17. Pringle & Claffy, lock No. 9	8,337 99	
32. George, Smith & Co.:		
Section No. 8	\$4,862 00	
Section No. 12	1,751 00	
		6,613 00
44. M. E. Ludington, repair contract ..	506 32	
46. Gage & Vandercook, sec. 1, 2 and 3 ..	8,449 00	
38. B. Swartwout, sec. 13	13,532 00	
49. C. C. B. Walker, sec. 4	2,652 00	
51. G. & J. Emmett, reconstruction of retaining wall on sec. 10	5,992 11	
52. Alanson Dodge, sec. No. 6	1,955 00	
53. Brazel & McCann, raising bridges ..	1,054 00	
54. John Ecker, repair contract	954 12	
		56,718 54

Total amount expended by Benjamin F. Bruce, Canal Commissioner, on the Cayuga and Seneca canal ..	\$64,804 92
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Total amount expended on the Cayuga and Seneca canal	\$86,781 39
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(F.)

CHEMUNG CANAL.

Vouchers rendered by John M. Jaycox, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct.	13.	Mathew Lewis, damages occupation of land, &c., lock No. 19.....	\$65 00	
Dec.	18.	David McConnell, rent of land and materials for bank lock 45.....	75 00	
	19.	John Fitzpatrick, labor, &c., securing timber washed from pier	174 50	
	22.	Abraham Stryker, rent of land constructing lock 46..	50 00	
	22.	L. Billinghamurst, damages to pile driver, &c., by flood ..	270 50	
	25.	F. A. Devoe, publishing notice to contractors	22 05	
	31.	N. S. Somers, lumber and repairing breaks.....	82 50	
	31.	John Magee, rent of land, storing timber, &c.....	125 00	
	31.	Comstock & Cassidy, publishing notice to contractors	25 50	
				\$889 75

ENGINEERS.

43.	Henry Van Vleck, division engineer	\$116 63	
49.	W. H. H. Gere, resident engineer .	1,000 00	
			1,116 63

CONTRACTORS.

40.	Thos. Fitzpatrick, pier at the head of Seneca lake.....	\$1,760 21	
Carried forward			
		\$1,760 21	\$2,006 38

EXPENDITURES ON CANALS.

Brought forward	\$1,760 21	\$2,006 38
46. Thomas W. Amsbury, repair contract	4,107 45	
48. Cephas C. Barker, towing path bridge over the Chemung river at Corning	3,162 00	
48. Cephas C. Barker, repair of locks 11, 21, 43 and 45, to 48....	9,842 64	
		18,872 30
Total amount expended by John M. Jaycox, Canal Commissioner, on the Chemung Canal		\$20,878 68

Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1861.

April 26. L. K. Cole, three boat measures,	\$7 50	
June 7. D. McConnell, temporary damage, Horseheads	50 00	
7. J. Fitzpatrick, repairing bridge at Havana	557 71	
25. B. P. Bailey, witness fee, claim of J. Fonda	14 98	
25. G. O. Henlon, witness fee, claim of J. Fonda	9 62	
25. B. Swartwout, witness fee claim of J. Fonda	4 66	
25. O. Peak, witness fee claim of J. Fonda	14 98	
25. H. Fitzhugh, witness fee claim of J. Fonda	3 30	
July 24. John S. Baldwin, borrowing pit, Elmira, Chemung	50 00	
		\$712 75

ENGINEERS.

No. 43. Henry Van Vleck, division engineer	\$462 64	
49. Wm. H. H. Gere, resident engi'r	1,700 00	
		2,162 64
Carried forward		\$2,875 39

EXPENDITURES ON CANALS.

71

Brought forward \$2,875 39

CONTRACTORS.

46. Thomas W. Amsbury, repair contract \$14,681 03

48. C. C. Barker, constructing waste weir 1,181 74

15,862 77

Total amount expended by Benjamin F.

Bruce, Canal Commissioner, on the Che-

mung canal \$18,738 16

Total amount expended on the Chemung canal \$39,616 84

(G.)

CROOKED LAKE CANAL.

Vouchers rendered by John M. Jaycox, Canal Commissioner, on the Crooked Lake canal.

MISCELLANEOUS.

1860.

Oct. 18. T. P. Ottaway, publishing notice to contractors.....	\$144 15	
30. Martin Holmes, lighting beacon at Dresden.....	57 41	
Dec. 17. Sentile & Vreeland, publishing notice	28 95	
17. H. W. Randall, lighting beacon at Dresden.....	24 00	
		\$254 51

ENGINEER.

No. 19. W. H. H. Gere, resident engineer	\$200 00	
		200 00

CONTRACTORS.

No. 12. Martin Holmes, repair contract..	\$987 76	
18. Homer W. Randall, do ..	822 16	
		1,809 92

Total amount expended by John M. Jaycox, Canal Commissioner, on the Crooked Lake canal.....		\$2,264 43
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Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

ENGINEER.

No. 19. W. H. H. Gere, resident engineer.....	\$200 00
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CONTRACTOR.

H. W. Randall, repair contract.....	\$4,125 80
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Total amount expended by Benjamin F. Bruce, Canal Commissioner, for payments made by him.....		\$4,325 80
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Total amount expended on the Crooked Lake canal..		\$6,590 23
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(H.)

CHENANGO CANAL.

Vouchers rendered by John M. Jaycox, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct.	10.	Denison & Fisher, publishing notice to contractors	\$10 12	
	24.	Adams & Lawyer, publishing notice to contractors	28 95	
	24.	H. S. McCollum, publishing notice to contractors	48 37	
	24.	H. S. McCollum, printing blanks	19 00	
	27.	W. D. Parsons, publishing notice	139 65	
Dec.	6.	Comstock & Cassidy, publishing notice	42 00	
	31.	D. J. Halstead, printing	12 50	
				\$300 59

ENGINEERS.

No.

60.	Orville W. Childs, specially appointed to survey the extension of the Chenango canal	\$1,242 89	
64.	W. H. H. Gere, resident engineer	200 00	
			1,442 89

CONTRACTORS.

56.	C. T. Chamberlain, repairs, sec. 1	\$3,246 25	
55.	Hitchins & Smith do do 2	1,325 00	
59.	Holmes & Huntley do do 3	1,388 32	
62.	Edwin W. Park, do do 1	2,443 76	
63.	John P. Smith, do do 2	1,189 99	
			9,593 32

Total amount expended by John M. Jaycox, Canal Commissioner, on the Chenango Canal..... \$11,336 80

Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1861.

Mar. 29. Repairs and stone, Sherburn aqueduct	\$1,387 80	
Apr. 15. James N. Brown, publishing notice	178 42	
16. J. G. K. Truair & Co., publishing notice	178 42	
28. L. K. Cole, 3 boat measures.	7 50	
May 17. A. Strong & Co., publishing notice	178 42	
June 17. A. M. Clapp & Co., publishing notice	172 57	
		\$2,103 13

ENGINEERS.

58. Henry Van Vleck, division engineer	\$283 35	
64. W. H. H. Gere, resident engineer..	2,000 00	
		2,283 35

CONTRACTORS.

59. Holmes & Huntley, repairs section 3	\$694 16	
61. John P. Smith, iron bridge, Norwich	452 46	
62. Edwin W. Park, repairs, section 1	814 59	
63. John P. Smith, do do 2	4,382 42	
65. R. M. Gere, repairs, section 1, special contract	15,660 71	
66. O. P. Root, repairs, sec. 3, special contract	13,709 59	
67. C.E. Smith, constructing Sherburne aqueduct	3,145 00	
68. Alonzo Peck & Co., repairs, sec. 1	3,963 84	
69. Josiah Brintnall, repairs section 3	1,983 32	
		44,806 09

Total amount expended by Benjamin F. Bruce, Canal Commissioner, on the Chenango Canal.....	\$49,192 57
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Total amount expended on the Chenango Canal....	<u>\$60,529 37</u>
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(I.)

BLACK RIVER CANAL.

Voucher rendered by Charles H. Sherrill, Canal Commissioner, for payment made by him.

DAMAGES.

Alfred N. Hough, Remsen, Oneida co. . . . \$1,008 14

Total amount expended by Charles H. Sherrill, Canal Commissioner, on the Black River canal \$1,008 14

Vouchers rendered by William I. Skinner, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1861.

Jan. 29.	H. Reynolds, removing buildings.....	\$25 00
29.	L. R. Lyons, use and occupation of land, Lyons Falls, Lewis county.....	225 25
Feb. 18.	F. L. Hagadom, printing notice of letting	155 55
18.	D. W. C. Grove, printing notice of letting	155 55
18.	E. H. Edwards, materials for section 2.....	703 72
19.	James Warner & Co., publishing notice to contractors	155 55
19.	W. D. Parsons, publishing notice to contractors	155 55
20.	D. J. Halsted, publishing notice to contractors	155 55
21.	A. P. Hansom, publishing notice to contractors	28 05
23.	F. A. DeVoe, publishing notice to contractors	33 15
	Carried forward.....	<u>\$1,792 92</u>

Brought forward.....	\$1,792 92	
1861.		
Feb. 28. Comstock & Cassidy, publishing notice to contractors..	160 65	
Mar. 4. R. H. Bangs, attending Wells Brook aqueduct.....	184 80	
16. Weed & Dawson, publishing notice to contractors	155 54	
30. W. S. Lawyer, publishing notice to contractors	33 15	
April 11. Comstock & Cassidy, publishing notice to contractors..	178 42	
17. Curtiss & Butts, publishing notice to contractors	155 55	
May 6. Fairman & Co., publishing notice to contractors	38 02	
7. H. D. Morris, publishing notice to contractors	38 02	
10. T. P. Ottoway, publishing notice to contractors	155 55	
24. Wm. Stewart, publishing notice to contractors	38 02	
31. R. H. Bangs, materials furnished by contractor in 1858	192 66	
June 22. L. Childs, publishing notice to contractors	15 67	
27. D. W. C. Grove, publishing notice to contractors	29 92	
July 6. Comstock & Cassidy, publishing notice to contractors..	32 77	
19. Weed, Dawson & Co., publishing notice to contractors..	32 78	
		\$3,234 44

ENGINEERS.

No.		
139. E. W. Butler, resident engineer..	\$3,988 65	
149. Wm. B. Taylor, division engineer	550 63	
157. Wm. B. Cooper, resident engineer	1,600 00	
		6,139 28
Carried forward.....		\$9,373 72

EXPENDITURES ON CANALS.

77

Brought forward..... \$9,373 72

CONTRACTORS.

No.			
140.	R. H. Bangs :		
	Repairs, sec. 1.....	\$1,732 92	
	Extra	100 22	
			1,833 14
141.	E. H. Edwards :		
	Repairs, sec. 2.....	\$4,308 59	
	Extra	805 23	
			5,113 82
144.	R. R. Kinne, section work, Delta feeder		4,153 08
146.	John Whittlesey, bridges for Delta feeder		867 00
152.	E. H. Edwards, repairs, additional portion, sec. 2.....		866 64
153.	E. H. Edwards, construction of south branch reservoir.....		2,414 00
154.	Candee & Denison, dam and lock, Otter creek		11,322 00
156.	Ward & McVickar, repairs, Black River improvement.....		3,799 92
158.	Benjamin F. Maxon, repairs, sec. 2	2,787 27	
159.	E. H. Edwards, repairs, sec. 1...	2,668 18	
160.	John F. Thomas, bridges at Tiffany's and Carter landings.....	2,108 00	
			37,933 05

LAND DAMAGES.

David Jones, Boonville, Oneida county	\$175 00	
John J. Williams, Leyden, Lewis co...	423 50	
W. T. Lewis, Leyden, Lewis co.....	384 91	
P. Dougherty, Pamelaia, Jefferson co..	1,589 25	
Jefferson Manufacturing comp'y, Brownville, Jefferson county	5,827 25	
E. Farwell and others, Watertown, Jefferson county	178 50	
John E. Brown, by assignee, Brownville, Jefferson county	1,059 50	
Carried forward.....	\$9,637 91	\$47,306 77

EXPENDITURES ON CANALS.

Brought forward	\$9,637 91	\$47 306 77
Watertown Cotton comp'y, Watertown, Jefferson county	423 80	
Black River Woolen company, Water- town, Jefferson co	434 17	
A. N. & H. J. Hough, Remsen, Oneida co	655 89	
Platt Williams, Boonville, do	3,500 00	
Hiram B. Stevens, Watertown, Jeffer- son county	2,445 00	
P. Kimball, administrator, Watertown,	1,589 25	
Alanson Skinner, Brownville, Jefferson county	1,907 10	
William Lord, Brownville, Jefferson co.	2,119 00	
J. & N. Miser, Pameila, do -	635 70	
V. P. Kimball, Watertown, do -	1,271 40	
Thomas Baker, do do -	1,589 25	
Ezra Wait, Pamela do -	211 90	
Colman & Frisbie, Brownville, do -	529 75	
Knowlton & Rice, Watertown, do -	4,201 89	
Knowlton & Rice, do do -	2,000 00	
Knowlton & Rice, do do -	4,201 89	
Knowlton & Rice, do do -	1,236 72	
Knowlton & Rice, do do -	1,073 50	
Charles M. Smith and others, Brown- ville, Jefferson county	4,238 00	
Dexter Martin and others, Watertown, Jefferson county	1,059 50	
E. Farwell and others, Watertown, Jefferson county	1,000 00	
E. Farwell and others, Watertown, Jefferson county	1,000 00	
E. Farwell and others, Watertown, Jefferson county	1,000 00	
N. Wiley and others, Watertown, Jeffer- son county	1,059 59	
G. W. Knowlton and others, Water- town, Jefferson county	2,119 00	
G. W. Knowlton and others, Water- town, Jefferson county	1,059 50	
Carried forward	\$52,199 62	\$47,3306 77

EXPENDITURES ON CANALS.

79

Brought forward.....	\$52,199 62	\$47,306 77
G. W. Knowlton and others, Watertown, Jefferson county.....	1,059 50	
G. W. Knowlton and others, Watertown, Jefferson county.....	1,059 50	
P. Munday, assignee, Pamelaia, Jefferson county	3,178 50	
S. & W. Hawkins, Brownville, Jefferson county	1,164 27	
Wm. & C. Wheelock, Boonville, Oneida county	815 00	
Watertown Cotton company, Watertown, Jefferson county.....	3,814 20	
Black River Woolen company, Watertown, Jefferson county.....	4,115 83	
D. Waterman and another, assignees, Boonville, Oneida county.....	3,968 16	
C. K. & T. Loomis, Brownville, Jefferson county.....	635 70	
Dexter and others, Watertown, Jefferson county.....	529 75	72,540 03
Total amount expended by Wm. I. Skinner, Canal Commissioner ou the Black River Canal		\$119,846 80
Total amount expended on the Black River Canal..		\$120,854 94

(J.)

GENESEE VALLEY CANAL.

Vouchers rendered by Hiram Gardner, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct.	5. Curtis, Butts & Co., publishing notice.....	\$231 52
	5. F. A. Devoe, publishing notice	55 12

1861.

March	2. Martin & Luckey, removing dam, &c., section 107.....	157 50
	21. A. M. Clapp & Co., publishing notice	166 72
	27. Myron Bangs, tools, &c., on repair section 2.....	460 00
April	5. J. G. K. Truair & Co., publishing notice.....	172 57
	5. James N. Brown, publishing notice	172 57
	5. Fairman & Co., publishing notice	38 02
June	15. A. Strong & Co., printing...	172 57
	15. Wm. Stuart, printing.....	38 00
	28. Wm. Dart, watching canal..	3 00
July	30. F. S. Martin, temporary occupation of land, &c.....	250 00
Aug.	6. F. G. Martin, lumber.....	5 65
Sept.	16. Samuel M. Russell, counsel for the State	25 00
	24. A. C. Dodge, raising banks on section 1.....	676 16

 \$2,624 40

 Carried forward \$2,624 40

EXPENDITURES ON CANALS.

81

Brought forward..... \$2,624 40

ENGINEERS.

No.

256. Daniel Richmond, resident engineer.....	\$1,000 00	
259. Orville W. Storey:		
Acting res't engineer \$793 23		
Division do 1,436 71		
	<u>2,229 94</u>	3,229 94

CONTRACTORS.

No.

248. Myron Bangs, keeping in repair section 2.....	\$7,506 90	
254. Lord & Barker, extension of Genesee Valley canal from Olean to Mill Grove.....	4,437 00	
258. Alfred C. Dodge, repairs section No. 1.....	7,554 65	
260. Myron Bangs, protection wall, excavation, &c., opposite trunk on section 57.....	2,213 22	
261. Wm. McArthur, repairs section 3..	6,318 00	
262. John Lambert, do do 2..	5,329 50	
251. E. W. Park, Champlain Creek feeder, village Cuba	1,355 82	
	<u>34,715 09</u>	

LAND DAMAGES.

E. B. Henry and J. W. Scofield, Portville, Cattaraugus county	\$294 40	
E. W. Park, Cuba, Allegany county...	326 00	
P. Burroughs, administrator, Portage, Livingston county.....	643 54	
Susan Chapman and others, Belfast, Allegany county.....	500 00	
	<u>1,763 94</u>	

Total amount expended by Hiram Gardner, Canal Commissioner on the Genesee Valley Canal	<u><u>\$42,333 37</u></u>
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(K.)

ONEIDA LAKE CANAL.

Vouchers rendered by John M. Jaycox, Canal Commissioner, for payments made by him.

MISCELLANEOUS.

1860.

Oct. 3. Curtis, Butts & Co., publish- ing notice	\$144 15	
		\$144 15

CONTRACTORS.

1. Abraham Howe, repair contract...	\$1,159 30	
2. Wm. R. Chapman, do ...	504 70	
3. Alanson Dodge, dredging at head of Oneida Lake	920 00	
		2,584 00

Total amount expended by John M. Jaycox, Canal Commissioner, on the Oneida Lake Canal...		\$2,728 15

Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

CONTRACTOR.

2. Wm. R. Chapman, repair contract.	\$1,177 61	
Amount expended by Benjamin F. Bruce, Canal Com- missioner, on the Oneida Lake Canal		1,177 61
Total amount expended on the Oneida Lake Canal.		3,905 76

(L.)

ONEIDA RIVER IMPROVEMENT.

*Vouchers rendered by John M. Jaycox, Canal Commissioner, for
payments made by him.*

MISCELLANEOUS.

1860.

Oct. 21. Ruger & Lester, attorneys' fees, &c	\$114 00	
Dec. 27. Wm. H. Carter, lighting bea- con at Brownson	157 50	
		\$271 50

LAND DAMAGES.

Nathaniel Deyo, Cicero, Onondaga Co.,	\$777 22	
Charles Billington, Sullivan, Mad'n Co.	746 01	
John Snyder, do do	799 49	
Ephraim Tuttle, do do	64 00	
Alexander Walker, Cicero, Onond'a Co.	185 09	
James A. Breyee, Sullivan, do	192 00	
Wm. L. Green, do do	303 23	
Lewis Harf, do do	192 00	
M. Ling, do do	150 00	
John B. Kathan, Cicero, Onondago Co.,	675 97	
George and Sally Terpenney, Cicero, Onondaga Co	1,180 93	
Thomas T. Milton, West Monroe, Os- wego Co	897 41	
H. H. DeWolf, Sullivan, Madison Co.	1,016 04	
Mary Ann Billington, do do	383 74	
Jonathan Edwards & Co. do do	594 89	
E. French and another, do do	358 91	
Cornelius Northrup, do do	588 41	
Norton Damon, do do	725 25	
Abraham Crownhart, do do	180 30	
Wm. Breze, do do	288 00	
Wm. J. Dodge's assignee, Hastings, Oswego Co	230 40	
Carried forward	\$10,529 29	\$271 50

Brought forward	\$10,529 29	\$271 50
Calvin H. Hart, Lenox, Madison Co...	640 00	
Stephen Markham, Cicero, Onondaga Co	217 60	
Gerrit Smith, Vienna, Oneida Co	1,280 00	
Eunice Nichols, Lenox, Madison Co...	200 00	
Richard Warr, do do	460 80	
Calvin F. Ward, do do	274 56	
A. Lampman's executors, Lenox, Madison Co.....	192 00	
C. D. & A. S. Walkup, Hastings & Monroe, Oswego.....	353 28	
		14,147 53

Amount expended by John M. Jaycox, Canal Commissioner, on the Oneida River improvement.... \$14,419 03

Vouchers rendered by Benjamin F. Bruce, Canal Commissioner, for payments made by him.

LAND DAMAGES.

P. & J. N. Phillips, West Monroe, Oswego Co.....	\$151 81
Henry Tiel, Lenox, Madison Co..	245 76
Addison Sweet, do do ...	237 70

Amount expended by Benjamin F. Bruce, Canal Commissioner, on the Oneida River improvement 635 27

Total amount expended on the Oneida River improvement \$15,054 30

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(N.)
STATEMENT
Showing the expenses of the engineering corps from 1852 to 1861, both inclusive.

CANALS.	1852	1853	1854	1855	1856
Erie and Champlain canals.....	\$389 87	.....	.....	.....	.....
Erie canal enlargement.....	115,198 16	\$56,238 51	\$82,211 01	\$146,025 60	\$185,243 95
Black River canal and Erie canal feeder	11,626 08	6,028 48	5,073 72	12,931 24	13,242 20
Genesee Valley canal	16,040 63	8,228 30	11,099 89	9,069 16	10,703 34
Oncida River improvement.....	.....	.....	.....	.....	.....
Champlain canal.....	.....	.....	.....	.....	12,431 86
Chemung canal	335 67	1,354 09	832 86	299 23	594 12
Oswego canal.....	6,734 62	6,752 29	9,982 16	14,483 32	16,085 89
Cayuga and Seneca canal.....	889 36	959 63	5,736 28	7,307 63	9,075 17
Crooked Lake canal.....	19 22	32 32	357 42	116 39	247 97
Chenango canal.....	31 14	.....	.....	.....	.....
Cayuga inlet improvement.....	.....	17 63	.....	.....	.....
Repairs of the Erie canal.....	370 00	3,066 44	518 02	.....	.....
Repairs of the Champlain canal.....	2,202 33	2,167 13	3,372 49	.....	.....
Seneca River improvement.....	.....	.....	.....	9,020 78	.....
	\$153,837 08	\$84,704 82	\$120,113 84	\$199,862 35	\$247,624 11

N—Continued.

CANALS.	1857	1858	1859	1860	1861
Erie and Champlain canals.....	.....	.....	.....	.....	.....
Erie canal enlargement.....	\$151,470 32	\$103,662 51	\$46,258 27	\$63,563 25	\$42,412 48
Black River canal and Erie canal feeder.....	5,678 00	5,715 16	3,743 26	2,640 84	7,318 46
Genesee Valley canal.....	9,196 75	8,543 14	6,908 63	3,261 72	2,841 49
Onondaga River improvement.....	.....	.....	.....	.....	.....
Champlain canal.....	8,146 59	7,222 08	1,440 10	8,901 54	4,845 73
Chemung canal.....	3,157 45	3,256 01	2,667 32	3,832 54	3,414 34
Oswego canal.....	11,919 42	10,548 51	9,711 42	9,247 06	6,778 06
Cayuga and Seneca canal.....	4,962 44	6,856 41	3,700 18	5,229 50	5,026 50
Crooked Lake canal.....	699 08	746 19	123 60	254 33	291 73
Chenango canal.....	.....	.....	29 12	318 36	2,490 21
Cayuga Inlet improvement.....	.....	.....	.....	.....	.....
Repairs of the Erie canal.....	.....	.....	.....	418 05	.....
Repairs of the Champlain canal.....	.....	.....	.....	.....	.....
Seneca River improvement.....	.....	.....	.....	.....	.....
	\$195,229 71	\$146,550 01	\$74,531 90	\$97,821 09	\$75,419 06

do	----	}	7,261 79	213 58
do	8 88			
do	5 50	}		
thern				
do	----	}	4,430 18	138 44
do	2 00			

(Q.)

A comparative statement of expenditures for repairs by superintendents and resident engineers, including payments to repair contractors, on all the canals of the State, for the years ending the 30th September 1860 and 1861.

CANALS.		Sec- tion.	Miles.	1860.	1861.	More in 1861.	Less in 1861.
Erie canal	-----	1	19	\$41,054 96	\$41,797 56	\$742 60	-----
do	-----	2	30	25,551 84	20,261 52	-----	\$5,290 32
do	-----	3	33	13,611 45	14,598 23	986 78	-----
do	-----	4	24	10,679 26	16,444 52	5,765 26	-----
do	-----	5	34	19,417 25	10,177 80	-----	9,239 45
do	-----	7	27	2,163 84	2,728 27	564 43	-----
do	-----	8	15	9,649 91	8,961 78	-----	688 13
do	-----	9	32	7,355 39	9,225 82	1,870 43	-----
do	-----	10	38	14,228 73	10,667 22	-----	3,561 51
do	-----	11	40	7,186 69	9,882 43	2,695 74	-----
do	-----	12	30	2,881 00	4,173 59	1,292 59	-----
do	-----	13	24	5,434 80	15,867 70	10,432 90	-----
do	-----	14	21	13,771 48	13,417 68	-----	353 80
		367		\$172,986 60	\$178,204 12	\$24,350 73	\$19,133 21

Q—Continued.

CANALS.	Sec- tion.	Miles.	1860.	1861.	More in 1861.	Less in 1861.
Champlain canal.....	1	24	\$26,497 46	\$12,305 84	-----	\$14,691 62
do.....	2	24	16,621 80	11,488 99	-----	5,132 81
do.....	3	20	12,401 70	4,952 97	-----	7,448 73
		68	\$56,020 96	\$28,747 80	-----	\$27,273 16
Oswego canal.....	1	15	\$3,290 14	\$10,821 70	\$7,531 56,	-----
do.....	2	23	12,349 29	14,730 74	2,381 45	-----
		38	\$15,639 43	\$25,552 44	\$9,913 01	-----
Cayuga and Seneca canal.....		22	\$3,491 67	\$19,284 05	\$15,792 38	-----
Chemung canal and feeder.....		39	\$12,431 48	\$23,455 49	\$11,024 01	-----
Crooked Lake canal.....		8	\$4,598 00	\$6,185 72	\$1,587 72	-----
Chemungo canal.....	1	31	\$15,285 87	\$10,902 16	-----	\$4,383 71
do.....	2	34	6,585 87	7,261 79	\$675 92	-----
do.....	3	32	5,061 78	4,430 18	-----	631 60
		97	\$26,933 52	\$22,594 13	\$675 92	\$5,015 31

Genesee Valley canal.....	1	52	13,742 63	7,985 15	-----	-----	\$5,757 48
do	2	38	14,033 29	13,266 42	-----	-----	766 87
do	3	37	10,742 03	7,198 03	-----	-----	3,544 00
	127		\$38,517 95	\$28,449 60	-----	-----	\$10,068 35
Oneida Lake canal and feeder	6		\$4,058 67	\$3,241 61	-----	-----	\$817 06
Black River canal	1	23	\$4,821 54	\$9,962 37	-----	\$5,140 83	-----
do	2	29	14,724 85	9,639 59	-----	-----	\$5,085 26
Black River improvement.....	42		2,141 58	3,799 92	-----	1,058 34	-----
	94		\$22,287 97	\$23,401 88	-----	\$6,199 17	\$5,085 26
Baldwinsville canal.....	12		-----	\$1,069 60	-----	\$1,069 60	-----

RECAPITULATION.

Erie canal	367	\$172,986 60	\$178,204 12	\$5,217 52	-----	-----	-----
Champlain canal.....	68	56,020 96	28,747 80	-----	-----	\$27,273 16	-----
Oswego canal	38	15,639 43	25,552 44	9,913 01	-----	-----	-----
Cayuga and Seneca canal.....	22	3,491 67	19,284 05	15,792 38	-----	-----	-----
Chemung canal and feeder.....	39	12,431 48	23,455 49	11,024 01	-----	-----	-----
Crooked Lake canal.....	8	4,598 00	6,185 72	1,587 72	-----	-----	-----
Chenango canal	97	26,933 52	22,594 13	-----	-----	4,339 39	-----

EXPENDITURES ON CANALS.

Q—RECAPITULATION—Continued.

CANALS.	Miles.	1860.	1861.	More in 1861.	Less in 1861.
Genesee Valley canal -----	127	\$38,517 95	\$28,449 60	-----	\$10,068 35
Oneida Lake canal and feeder -----	6	4,058 67	3,241 61	-----	817 06
Black River canal -----	94	22,287 97	23,401 88	\$1,113 91	-----
Baldwinsville canal -----	12	-----	1,069 60	1,069 60	-----
	878	\$356,966 25	\$360,186 44	\$45,718 15	\$42,497 96
			356,966 25	42,497 96	
Excess of 1861 over 1860 -----	-----	-----	\$3,220 19	\$3,220 19	

(R.)

A comparative statement of the cost of repairs of breaches for the years 1860 and 1861.

CANALS.	Section.	1860.	1861.	More in 1861.	Less in 1861.
Erie canal.....	1	-----	\$453 51	\$453 51	-----
do	2	\$7,357 97	-----	-----	\$7,357 97
do	4	-----	696 24	696 24	-----
do	5	3,463 33	-----	-----	3,463 33
do	8	-----	910 00	910 00	-----
do	9	672 58	550 00	-----	122 58
do	10	2,819 96	-----	-----	2,819 96
do	13	-----	99 50	99 50	-----
do	14	745 70	-----	-----	745 70
do		378 00	-----	-----	378 00
Champlain canal		326 02	-----	-----	326 02
Genesee Valley canal		-----	409 32	409 32	-----
Black River canal		-----	-----	-----	-----
		\$15,763 56	\$3,118 57	\$2,568 57	\$15,213 56
		3,118 57	-----	-----	2,568 57
Excess of 1860 over 1861.....	----	\$12,644 99	-----	-----	\$12,644 99

EXPENDITURES ON CANALS.

(S.)—A comparative statement of expenditures for repairs, by the superintendents, resident engineers and Canal Commissioners, including payments to repair contractors on each canal, for the years ending 30th Sept., 1860 and 1861.

CANALS.	Commissioners.	Miles.	1860.	1861.	More in 1861.	Less in 1861.
Erie, sections 1, 2, 3, 4, 5	Skinner	140	\$153,483 00	\$110,984 16	-----	\$42,498 84
do 7, 8, 9	Jaycox and Bruce	74	27,797 44	81,240 39	\$53,442 95	-----
do 10, 11, 12, 13, 14	Gardner	153	106,885 74	112,975 84	6,090 10	-----
Total Erie canal	-----	367	\$288,166 18	\$305,200 39	\$59,533 05	\$42,498 84
Champlain canal	Skinner	68	61,975 80	35,697 07	-----	26,278 73
Oswego canal	Jaycox and Bruce	38	37,797 46	26,480 71	-----	11,316 75
Cayuga and Seneca canal	do	22	6,074 50	19,850 34	13,775 84	-----
Chemung canal	do	39	82,218 61	44,283 85	-----	37,934 76
Crooked Lake canal	do	8	5,065 24	6,758 82	1,693 58	-----
Chenango canal	do	97	28,936 36	61,691 85	32,755 49	-----
Genesee Valley canal	Gardner	127	43,832 26	32,752 11	-----	11,080 15
Oneida Lake canal	Jaycox and Bruce	6	4,269 42	4,305 76	36 34	-----
Oneida River improvement	do	20	182 67	15,054 30	14,871 63	-----
Black River canal	Skinner	94	24,200 98	26,082 27	1,881 29	-----
Baldwinsville canal	Jaycox and Bruce	12	-----	1,069 60	1,069 60	-----
			\$582,719 48	\$579,227 07	\$125,616 82	\$129,109 23
			579,227 07	-----	-----	125,616 82
Excess of 1860 over 1861	-----	-----	\$3,492 41	-----	-----	\$3,492 41

(T.)

Statement showing the average cost per mile of the repairs of each division of the Erie canal, by the superintendents, from 1835 to 1861, both years inclusive, including payments to repair contractors from 1835 to 1861, and expenditures by resident engineers from 1857 to 1861, inclusive.

YEAR.	No. 1.—Eastern Division— from Albany to Higgins, 136 miles.	No. 2.—Middle Division— from Higgins to Montezuma, 69 miles.	No. 3.—Western Division— from Montezuma to Buffalo—159 miles.
	Average per mile.	Average per mile.	Average per mile.
1835 -----	\$1,043 06	\$704 44	\$867 35
1836 -----	773 56	455 10	629 00
1837 -----	845 42	479 62	853 61
1838 -----	732 32	438 61	1,051 69
1839 -----	623 08	394 09	640 09
1840 -----	1,021 72	441 26	684 65
1841 -----	686 20	482 34	448 74
1842 -----	981 08	612 58	580 18
1843 -----	908 32	367 48	715 07
1844 -----	1,118 88	433 94	913 69
1845 -----	983 26	650 06	949 88
1846 -----	934 35	621 42	928 93
1847 -----	961 88	667 40	991 14
1848 -----	1,417 06	993 26	1,071 16
1849 -----	1,094 33	621 42	939 83
1850 -----	1,284 17	527 69	1,238 84
1851 -----	1,514 98	514 62	799 89
1852 -----	2,237 34	709 13	891 91
1853 -----	1,878 67	691 95	1,114 77
1854 -----	2,038 35	899 38	1,135 31
1855 -----	2,043 06	393 86	781 32
1856 -----	1,547 22	433 42	976 95
1857 -----	1,128 36	607 07	1,138 44
1858 -----	1,115 63	614 91	965 89
1859 -----	1,586 36	360 06	888 56
1860 -----	787 96	259 04	284 33
1861 -----	737 71	282 65	353 00

EXPENDITURES ON CANALS.

(U.)

Statement showing the amount expended by the superintendents of repairs, and the average cost per mile on each and all of the canals, from 1826 to 1861, (except expenditures in 1854 under contesting superintendents,) including expenditures by resident engineers from 1857 to 1861, and payments to repair contractors from 1855 to 1861, both inclusive.

YEAR.	Erie and Champlain canals.		Oswego canal.		Cayuga and Seneca canal.	
	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.
1826	\$182,162	\$414	-----	-----	-----	-----
1827	232,472	528	-----	-----	-----	-----
1828	225,846	513	-----	-----	-----	-----
1829	232,931	529	\$8,637	\$289	-----	-----
1830	202,968	461	13,003	361	\$8,449	\$386
1831	168,240	382	12,590	349	5,447	247
1832	327,302	743	9,170	254	3,363	152
1833	328,585	746	12,259	340	5,356	243
1834	429,650	976	11,295	313	8,243	374
1835	392,921	893	12,181	338	8,832	401
1836	310,183	704	16,327	453	9,685	440
1837	365,406	830	51,637	1,434	29,898	1,358
1838	374,713	851	57,908	1,608	28,539	1,297
1839	297,722	676	49,360	1,371	18,944	861
1840	364,292	827	24,463	679	23,397	1,063
1841	255,687	581	34,796	915	24,740	1,124
			26,406	694	13,940	633

1842	322,354	732	31,427	827	15,829	719
1843	297,614	676	23,678	623	10,938	497
1844	371,449	844	28,598	752	14,442	656
1845	399,094	907	46,639	1,227	14,191	645
1846	371,185	843	53,546	1,409	12,325	560
1847	380,388	864	39,551	1,040	14,192	645
1848	503,953	1,145	72,783	2,021	13,000	591
1849	395,681	899	33,792	862	10,823	537
1850	478,887	1,085	31,805	837	19,831	492
1851	433,335	982	30,510	803	20,615	937
1852	592,457	1,343	42,757	1,125	25,434	1,156
1853	575,777	1,306	38,026	1,001	17,421	792
1854	611,342	1,386	86,530	2,277	17,025	774
1855	555,492	1,259	60,596	1,595	10,567	480
1856	454,865	1,031	59,824	1,574	9,864	448
1857	458,476	1,039	78,037	2,053	13,233	601
1858	437,379	992	107,698	2,834	21,769	989
1859	446,746	1,027	48,253	1,269	5,850	266
1860	229,008	526	15,639	412	3,492	159
1861	206,952	476	25,552	672	19,284	876

EXPENDITURES ON CANALS.

U—Continued.

YEAR.	Chemung canal.		Crooked Lake canal.		Chenango canal.	
	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.
1826	---	---	---	---	---	---
1827	---	---	---	---	---	---
1828	---	---	---	---	---	---
1829	---	---	---	---	---	---
1830	---	---	---	---	---	---
1831	---	---	---	---	---	---
1832	---	---	---	---	---	---
1833	\$4,666	\$666	---	---	---	---
1834	25,369	692	\$2,653	\$331	---	---
1835	9,616	259	3,566	445	---	---
1836	9,655	261	4,739	592	---	---
1837	14,569	393	6,214	776	\$19,508	\$201
1838	13,494	364	4,454	556	20,809	214
1839	13,382	361	3,557	444	17,248	177
1840	12,401	335	4,501	562	15,427	159
1841	23,360	631	9,034	1,129	15,563	160
1842	34,524	933	8,113	1,014	18,955	195
1843	14,295	386	4,047	505	15,062	156
1844	12,739	344	3,951	493	15,959	164
1845	17,978	485	4,765	595	18,951	195

EXPENDITURES ON CANALS.

97

1846	14,295	385	5,309	663	18,452	190
1847	15,917	430	5,890	736	18,859	194
1848	27,232	736	8,516	1,064	20,901	215
1849	24,306	657	10,295	1,286	25,880	266
1850	33,230	852	5,629	704	27,181	280
1851	38,669	991	5,391	673	28,612	295
1852	33,100	848	8,587	1,073	36,460	375
1853	24,366	625	4,932	616	38,243	394
1854	30,654	786	5,132	641	49,602	511
1855	23,033	591	5,077	635	49,416	509
1856	17,209	441	3,647	456	13,903	143
1857	87,231	2,237	4,658	582	27,826	287
1858	150,605	3,861	9,803	1,225	44,114	455
1859	21,965	563	4,850	606	26,069	269
1860	12,431	319	4,598	575	26,934	278
1861	23,455	601	6,186	773	22,594	233

[A. 179.—S. 90.]

EXPENDITURES ON CANALS.

U—Continued.

YEAR.	Genesee Valley canal.		Oneida Lake canal and feeder.		Oneida River improvement.	
	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.
1826	---	---	---	---	---	---
1827	---	---	---	---	---	---
1828	---	---	---	---	---	---
1829	---	---	---	---	---	---
1830	---	---	---	---	---	---
1831	---	---	---	---	---	---
1832	---	---	---	---	---	---
1833	---	---	---	---	---	---
1834	---	---	---	---	---	---
1835	---	---	---	---	---	---
1836	---	---	---	---	---	---
1837	---	---	---	---	---	---
1838	---	---	---	---	---	---
1839	---	---	---	---	---	---
1840	\$4,529	\$125	---	---	---	---
1841	10,468	290	\$3,370	\$561	---	---
1842	17,749	341	3,608	601	---	---
1843	15,210	292	2,232	372	---	---
1844	15,556	299	1,636	273	---	---
1845	16,901	325	1,933	322	---	---

EXPENDITURES ON CANALS.

99

1846	17,399	334	17,875	2,979		
1847	15,782	303	5,842	973		
1848	66,527	510	1,855	309		
1849	18,192	349	2,160	360		
1850	18,575	357	4,892	815	\$412	\$21
1851	33,136	368	3,590	598	2,250	112
1852	75,562	839	6,361	1,060	2,145	107
1853	55,766	620	6,166	1,028	1,554	77
1854	48,093	534	10,441	1,740	3,255	163
1855	46,437	516	6,236	1,039	3,913	196
1856	34,271	381	2,589	432	2,482	124
1857	60,650	505	3,919	653	3,591	179
1858	80,911	674	4,104	684	2,797	139
1859	46,490	366	3,975	662	1,079	54
1860	38,518	304	4,059	676		
1861	28,450	224	3,242	540		

EXPENDITURES ON CANALS.

U—Continued.

YEAR.	Black River canal.		Baldwinsville canal.		Total miles.	Total cost of repairs.	Total average per mile.
	Cost of repairs.	Average per mile.	Cost of repairs.	Average per mile.			
1826	-----	-----	-----	-----	440	\$182,162	\$414
1827	-----	-----	-----	-----	440	232,472	528
1828	-----	-----	-----	-----	478	234,483	490
1829	-----	-----	-----	-----	500	254,433	509
1830	-----	-----	-----	-----	500	221,005	442
1831	-----	-----	-----	-----	500	180,773	361
1832	-----	-----	-----	-----	500	344,917	690
1833	-----	-----	-----	-----	537	372,789	694
1834	-----	-----	-----	-----	545	478,964	879
1835	-----	-----	-----	-----	545	432,115	793
1836	-----	-----	-----	-----	545	406,122	745
1837	-----	-----	-----	-----	642	492,144	766
1838	-----	-----	-----	-----	642	481,774	750
1839	-----	-----	-----	-----	642	379,769	591
1840	-----	-----	-----	-----	694	460,866	664
1841	-----	-----	-----	-----	700	357,828	511
1842	-----	-----	-----	-----	700	452,559	646
1843	-----	-----	-----	-----	700	383,076	547
1844	-----	-----	-----	-----	700	464,330	663
1845	-----	-----	-----	-----	700	520,452	743

EXPENDITURES ON CANALS.

101

[illegible]

(V.)

Statement of the amounts expended for repairs of old and erection of new work on the Erie canal, divided into three sections, and the average cost per mile of each section, by the superintendents, from 1835 to 1861, including payments to repair contractors from 1855 to 1861, and expenditures by resident engineers for repairs from 1857 to 1860, and also the amounts expended by the Canal Commissioners on said canal for repairs; the total by superintendents, resident engineers and Canal Commissioners, including payments to repair contractors, and the total average per mile, from 1835 to 1861, both years inclusive.

YEAR.	SECTION No. 1. From Albany to Higgins, 146 miles.		SECTION No. 2. From Higgins to Montezuma, 69 miles.		SECTION No. 3. From Montezuma to Buffalo, 159 miles.		Total amount expended by superintendents, resident engineers and payments to repair contractors.	Total amount expended by Canal Commissioners, not including their salaries.	Total amount expended by Canal Commissioners, superintendents, engineers, and payments to repair contractors.	Total average per mile.
	SECTION No. 1.		SECTION No. 2.		SECTION No. 3.					
	Cost of repairs.	Av. per mile.	Cost of repairs.	Av. per mile.	Cost of repairs.	Av. per mile.				
1835...	\$152,286 79	\$1,043 06	\$53,133 30	\$708 44	\$137,908 52	\$867 35	\$343,328 61	\$9,391 90	\$352,720 51	\$928 21
1836...	112,949 46	773 56	34,132 85	455 10	100,010 94	629 00	247,084 25	4,119 21	251,203 46	661 06
1837...	123,431 97	845 42	35,971 35	479 62	135,723 92	853 61	295,127 24	3,985 61	299,112 85	787 14
1838...	106,903 76	732 22	32,895 60	438 61	167,219 37	1,051 69	307,018 73	1,484 75	308,503 48	811 85
1839...	90,969 01	623 08	29,556 92	394 09	101,774 70	640 09	222,300 63	1,563 18	223,863 81	589 12
1840...	149,172 14	1,021 72	34,594 83	441 26	108,859 85	684 65	292,626 82	5,923 88	298,550 70	785 66
1841...	100,186 32	686 20	36,175 58	482 34	77,711 18	448 74	214,073 08	3,056 86	217,129 94	571 39
1842...	125,575 92	981 08	66,771 25	612 58	82,996 90	580 18	275,314 07	7,735 61	283,049 68	744 87
1843...	116,265 55	908 32	40,054 88	367 48	102,255 30	715 07	258,575 73	27,509 53	286,085 26	752 86
1844...	143,216 77	1,118 88	47,299 63	433 94	130,656 90	913 69	321,173 30	59,047 25	380,220 55	1,000 58
1845...	125,857 03	983 26	70,856 17	650 06	135,833 21	949 88	332,546 41	94,061 24	426,607 65	1,122 63
1846...	115,859 80	934 35	59,656 53	621 42	141,197 40	928 93	316,712 73	21,531 47	338,244 20	909 26
1847...	119,214 00	961 88	64,071 85	667 40	150,652 91	991 14	333,998 76	15,497 45	349,496 21	939 50
1848...	175,715 59	1,417 06	95,353 30	993 26	162,816 89	1,071 16	433,885 78	24,666 23	458,452 01	1,232 40
1849...	135,696 38	1,094 33	59,656 90	621 42	142,855 01	939 83	338,208 29	4,451 31	342,659 60	921 12
1850...	188,772 86	1,284 17	39,048 90	527 69	188,304 11	1,238 84	416,125 87	2,806 98	418,931 85	1,123 14

1851...	222,702 54	1,514 98	38,081 76	514 62	121,584 00	799 89	382,368 30	26,288 30	408,656 60	1,995 59
1852...	328,889 80	2,237 34	62,475 08	709 13	135,572 72	891 91	516,938 18	17,572 42	534,510 61	1,433 00
1853...	276,164 51	1,878 67	51,204 27	601 95	169,445 06	1,114 77	496,813 84	39,707 35	636,521 19	1,438 39
1854...	299,638 03	2,038 35	66,554 54	899 38	172,567 17	1,135 31	538,759 74	39,054 47	577,814 21	1,549 10
1855...	300,330 21	2,043 06	27,145 66	393 86	118,760 68	781 32	448,236 55	24,693 26	472,929 81	1,267 88
1856...	277,441 66	1,547 22	33,553 37	433 42	148,496 12	976 95	409,491 15	47,191 65	426,682 80	1,224 35
1857...	165,869 16	1,128 36	46,923 29	607 07	173,043 61	1,138 94	385,836 06	40,144 05	425,980 11	1,141 88
1858...	163,997 32	1,115 63	45,507 28	614 96	146,815 01	965 89	356,319 61	20,317 64	376,637 25	1,010 55
1859...	215,745 52	1,477 71	24,843 89	360 06	141,280 79	888 55	381,870 20	79,584 14	461,454 34	1,233 83
1860...	110,314 76	787 96	19,169 14	259 04	43,502 70	284 33	172,986 60	115,179 58	288,166 18	785 19
1861...	103,279 62	737 71	20,915 87	282 65	54,008 62	353 00	178,204 12	126,996 27	305,200 39	831 61

In consequence of a change in the lines of some of the superintendents, the miles for each of the above sections have been as follows :

From 1835 to 1841—Sec. No. 1, 146 miles; Sec. 2, 69 miles; Sec. 3, 159 miles. | From 1846 to 1849—Sec. No. 1, 124 miles; Sec. 2, 96 miles; Sec. 3, 152 miles.
From 1842 to 1845—Sec. No. 1, 128 miles; Sec. 2, 109 miles; Sec. 3, 143 miles. | From 1850 to 1859—Sec. No. 1, 147 miles; Sec. 2, 74 miles; Sec. 3, 162 miles.

STATEMENT (W.)

Of the amounts expended for repairs of old and the erection of new work, on the Champlain canal, (including the Glens Falls feeder and dam,) seventy miles, by the superintendents of repairs and the Canal Commissioners, and of the average cost per mile from 1835 to 1861, including expenditures by resident engineers from 1857 to 1861, and payments to repair contractors from 1855 to 1861, inclusive.

YEAR.	Superintendents, resident engineers, and repair contractors.	Canal Commissioners.	Superintendents, Canal Commissioners, resident engineers, and repair contractors.	Average cost per mile.
1835-----	\$49,593 04	-----	\$49,593 04	\$825 55
1836-----	63,098 84	-----	63,098 84	1,051 65
1837-----	70,279 51	\$49,236 29	119,515 80	1,991 93
1838-----	67,694 77	71,652 50	139,347 27	2,322 45
1839-----	75,422 15	40,344 57	115,760 72	1,929 45
1840-----	71,665 69	14,566 70	86,222 39	1,437 04
1841-----	41,614 14	34,621 34	76,235 48	1,270 59
1842-----	47,040 33	92,680 90	139,721 23	2,228 69
1843-----	39,038 61	17,237 90	56,276 51	937 94
1844-----	50,276 03	4,566 33	54,842 36	914 04
1845-----	66,548 56	3,212 29	69,760 85	1,162 68
1846-----	64,471 65	452 58	54,924 23	915 40
1847-----	46,389 35	1,406 64	47,795 99	702 88
1848-----	70,067 12	250 00	70,317 12	1,034 07
1849-----	57,472 77	34 00	57,506 77	845 69
1850-----	62,823 86	-----	62,823 86	807 48
1851-----	50,966 83	13,539 15	64,505 98	948 62

1852	75,519 01	30,390 89	105,909 90	1,557 50
1853	78,963 36	5,321 78	84,285 14	1,239 49
1854	72,582 41	6,724 85	79,307 26	1,166 28
1855	90,383 21	12,175 28	102,558 49	1,508 21
1856	45,374 20	5,770 29	51,144 49	752 12
1857	72,640 31	200 00	72,840 31	1,071 18
1858	81,059 16	-----	81,059 16	1,191 31
1859	64,875 76	9,947 25	74,823 01	1,100 34
1860	56,020 96	5,954 84	61,975 80	914 41
1861	28,747 80	6,949 27	35,697 07	524 96

In consequence of a change in the lines under the superintendents on section 1 of the Erie, and section 1 of the Champlain canal, which took effect on the 19th March, 1845, the expenditures from that time on the Champlain canal, including the Glens falls feeder and dam, have been for 68 miles.

(X.)

Statement of expenditures for repairs on each division of the canals, by the superintendents, resident engineers, and Canal Commissioners, including payments to repair contractors, for the years 1860 and 1861.

Division.	Commissioner.	1860.	1861.	More in 1861.	Less in 1861.
Eastern Division -----	Skinner -----	\$239,659 78	\$172,763 50	-----	\$66,896 28
Middle Division -----	Jaycox and Bruce -	192,341 70	260,735 62	\$68,393 92	-----
Western Division -----	Gardner -----	150,718 00	145,727 95	-----	4,990 05
		\$582,719 48	\$579,227 07	\$68,393 92	\$71,886 33
		579,227 07	-----	-----	68,393 92
Excess of 1860 over 1861 ----	-----	\$3,492 41	-----	-----	\$3,492 41

STATEMENT (Y.)

Showing the expenditures for repairs by the superintendents, resident engineers and Canal Commissioners, including payments to repair contractors for eleven years ending with 1861; also showing the average cost per year for the first five and the last six years of said period.

NAME OF CANAL.	1851	1852	1853	1854	1855	Total.	Yearly average.
Erie canal, eastern division.....	\$257,351 49	\$374,619 08	\$303,279 03	\$323,538 73	\$320,369 97	\$1,579,158 30	\$315,831 66
Erie canal, middle division	39,062 69	53,527 14	59,986 62	71,582 99	34,024 42	258,183 86	51,636 77
Erie canal, western division.....	124,878 17	136,755 28	178,577 32	182,692 49	123,414 18	746,317 44	149,263 49
Champlain canal.....	\$421,292 35	\$564,901 50	\$541,842 97	\$577,814 21	\$477,808 57	\$2,583,650 60	\$516,731 92
Oswego canal.....	50,966 83	75,519 01	78,963 36	79,307 26	102,568 49	387,314 95	77,462 99
Cayuga and Seneca canal.....	91,056 11	105,474 27	191,122 95	186,529 61	95,878 69	670,061 63	134,012 33
Chemung canal.....	20,615 27	27,529 84	29,194 35	17,042 53	10,567 16	104,949 15	20,989 83
Crooked Lake canal.....	47,093 62	35,244 38	37,030 94	33,700 39	23,033 94	176,103 28	35,220 65
Chenango canal.....	11,804 98	8,586 59	4,931 74	5,131 71	5,076 88	35,531 90	7,106 38
Genesee Valley canal.....	28,703 59	42,572 56	38,243 11	49,601 81	49,416 62	208,537 69	41,707 54
Oneida Lake canal and feeder.....	33,135 50	75,561 51	55,766 48	50,092 91	46,437 04	260,993 44	52,198 69
Oneida River improvement.....	3,590 16	6,360 85	6,166 41	10,440 57	6,235 63	32,793 62	6,558 72
Black River canal.....	2,249 61	2,145 42	1,554 10	3,254 89	3,913 62	13,117 64	2,623 53
Black River improvement.....	22,701 53	30,610 93	26,829 88	34,975 56	33,861 68	148,979 58	29,795 91
Baldwinsville canal.....	.....	.....	.....	.....	.....	.....	.....
Seneca River improvement.....	.....	.....	.....	.....	.....	.....	.....
Total	\$733,209 56	\$974,506 86	\$1,011,646 29	\$1,052,978 38	\$857,160 98	\$4,269,502 07	\$925,900 41

Y—Continued.

NAME OF CANAL.	1853	1857	1858	1859	1860	1861	Total.	Yearly average.
Erie canal, eastern division.....	\$214,662 37	\$490,375 58	\$173,469 76	\$242,281 59	\$153,483 60	\$110,984 16	\$1,105,256 37	\$184,209 39
Erie canal, middle division.....	40,715 88	51,031 54	51,201 12	43,390 63	27,797 44	81,240 39	298,377 60	49,724 50
Erie canal, western division.....	181,304 55	181,602 99	151,966 37	173,782 21	166,885 71	112,973 84	916,517 70	151,732 65
Champlain canal.....	\$435,682 80	\$425,986 11	\$376,637 25	\$461,454 31	\$288,166 18	\$305,200 39	\$2,314,121 07	\$385,686 84
Oswego canal.....	51,144 49	72,840 31	81,059 16	74,823 01	61,975 80	35,697 07	377,359 84	62,921 30
Cayuga and Seneca canal.....	59,824 88	78,037 66	107,697 72	55,253 08	37,797 46	26,480 71	363,690 91	60,848 48
Chemung canal.....	9,864 62	15,233 62	21,769 49	14,547 37	6,974 50	19,856 34	85,359 94	14,223 72
Crooked Lake canal.....	18,572 52	117,219 01	178,950 61	60,491 86	82,218 61	44,283 85	562,196 46	85,699 41
Crooked Lake canal.....	4,427 38	11,999 15	10,387 65	4,497 31	5,665 21	6,798 82	43,635 57	7,272 59
Genesee canal.....	15,492 48	27,985 76	44,729 94	26,502 23	28,936 36	61,601 85	265,538 61	34,923 10
Genesee Valley canal.....	34,271 11	60,649 79	80,910 70	48,303 65	47,832 26	32,752 11	309,719 02	50,119 81
Onondaga Lake canal and feeder.....	2,589 66	3,939 86	4,103 95	6,125 00	4,269 42	4,365 76	24,333 65	4,055 61
Onondaga River improvement.....	2,481 73	5,106 47	2,797 27	1,078 83	182 67	15,034 30	29,791 27	4,450 21
Black River improvement.....	17,203 73	15,786 65	18,621 75	20,484 29	21,459 40	22,982 35	119,848 17	19,974 09
Baldwinville canal.....	.....	.....	.....	.....	2,741 58	3,799 92	6,541 50	1,090 25
Seneca River improvement.....	422 46	455 43	2,381 62	413 30	.....	1,059 60	4,742 41	790 40
.....	.....	885 13	.....	.....	.....	.....	885 13	147 52
Total.....	\$572,937 86	\$632,128 36	\$930,047 12	\$770,973 66	\$582,719 48	\$679,227 07	\$1,577,033 55	\$229,505 35

State of New York.

No. 91.

IN SENATE,

April 8, 1862.

STATEMENT

OF OFFICERS OF SING SING STATE PRISON, IN ANSWER TO A
REPORT MADE BY AMOS PILSBURY.

In reply to a report made by Gen'l Amos Pilsbury to His Excellency, Governor Morgan, in reference to his examinations through the State prisons of this State, during the summer of 1861, the undersigned begs leave, respectfully, to submit a brief statement of the facts connected with Mr. Pilsbury's visit to Sing Sing prison, in reference to his allusion to me in his report,

Some time in the month of July last, I was informed that Mr. Pilsbury had made a visit to Clinton prison, and being in Albany, I called on him at the Penitentiary, to learn, so far as he might be willing to communicate them, the results of his examinations, and hear any statements or suggestions he had to make as to the condition in which he found that prison. In answer to my inquiries, as to the condition in which he found Clinton prison, he said that he was pleased to find everything connected therewith in good condition (generally speaking), stating his objections to the manner of the working of the men in some of the apartments of the iron contract, &c. Mr. Pilsbury very kindly invited me to go through the Penitentiary, under his charge; I accepted the invitation, and was much pleased with my visit. I inquired if he intended visiting Sing Sing prison; he said he intended going there very soon, but was unable, or at least did not name a day. I then stated to him that I should be at the prison about the first of August, and would be pleased to meet him there, and show him the condition of the affairs at that prison.

I heard nothing further from Mr. Pilsbury until I went to Sing Sing prison on the 3d of August. I there learned that Mr. Pilsbury had been at the prison since 31st July, and had been engaged in making a general examination into its condition, both as to the general discipline (both male and female), the mode of punishments, and its financial affairs, &c. Mr. Pilsbury left for New York, as I was informed, on my arrival, leaving with the same train. I had not the pleasure of meeting him. I was informed by the officers of the prison that especial pains had been taken by them to give him all the information he required, and were ready at any time to go with him, and did go through every department, both male and female prison; that he had expressed himself to them pleased with the general appearance of the prison, and the improvements that had been made there since his visit to that prison some years before.

The Agent and Warden, the principal keeper, the clerk and other officers of the prison (as I have been informed), rendered him all the assistance that he desired; our books of entries of purchases, and all others connected with the financial affairs of the prison, were shown him by the clerk, and explained, with which he expressed himself highly pleased, and, so far as checks and guards upon officers, in their purchases, &c., was all that could be desired; and during his stay there, from Wednesday until Saturday, all the opportunities and facilities for examination were offered to him that he required. The first interview I had with Mr. Pilsbury was on Monday, the 5th of August, on his return, as he said, from New York; he then informed me how long he had been at the prison, the time spent in examinations, and the facilities rendered by the officers in giving him all the information he desired, and that he had made all the examinations, or nearly so, that he deemed necessary. I stated to him that I regretted that I had not been with him while here, and would be pleased with an opportunity to render any assistance in my power in making any investigations, or in giving him any information the Governor required. I then invited him to go with me through the prisons; we went through several of the shops, the yard, and he was shown the docks recently built, which he admitted was a great improvement (or would be, when completed) to the prison grounds. We did not make as full an examination as I should have wished, for the reason, assigned by Mr. Pilsbury, that he had been shown all over the prison, both

male and female, by our officers the week before, I not being present. On our return to the office again, Mr. Pillsbury then stated to me the general object and purpose for which he had been appointed to visit the prisons, and the reasons which induced his appointment by the Governor, being substantially the same as are now stated in his report. I then said to Mr. Pillsbury that I regretted the Governor had not notified the Board of Inspectors of his intention of sending him through our prisons, to which remark he seemed to take exceptions, and at once said if I had any objection to his visiting the prison he would leave immediately. I then stated to him that I had no objections whatever, and that I made none, and at the same time told him that no man that the Governor could have selected for that purpose would have been more acceptable than himself, by reason of his long acquaintance with prison affairs, and that I was perfectly willing that he should make any investigation he desired, and would be glad to furnish the Governor or him any information in my power; but all that I meant by the remark was, that the Inspectors, as public officers, had a right to expect, as matter of courtesy, that the Governor, in appointing Mr. Pillsbury as agent for that purpose, he would have given them notice of that fact. I then said we had no concealments; everything was open to his free and full examination. He still seemed disposed to construe my remarks as an insult, or personally offensive to him; I assured him that I had no such design; and when about leaving, soon after this conversation, I again invited him to return again next day, and I would take great pleasure in going with him, and give him all the information he desired. This is the only opportunity I had of meeting Mr. Pillsbury during his visit through Sing Sing prison, he having then completed his examinations, or nearly so, as he admitted to me; he did not return again to the prison (as I am informed by the officers), but left for home.

In examining Mr. Pillsbury's report to the Governor, I was surprised to find that I had been so grossly misrepresented. He charges me with having received him coolly. I deny the charge, and aver that I received him with entire frankness and cordiality. Again, he says I manifested no disposition to give him an opportunity to ascertain the real condition of the affairs of the prison. On the contrary, I done all in my power, during the short time he was at the prison on Monday, to give him any information he desired, and requested him to return on the following day, for the

purpose of making further examinations, if he desired. I treated him respectfully, and as an authorized, and not as a casual visitor, and the attention paid him we should not have been willing to give to any stranger. I was not annoyed to think that the Governor had appointed him, or any one else, to examine the prisons. I merely alluded to the fact, that the Inspectors should have been informed as to his intended visitation, and that no conversation was had in reference to others assuming or exercising duties which belonged to the Inspectors; nor did I ignore the official capacity in which he appeared, by using the expression attributed to me, that I was willing to give him, *as an individual*, any information he desired; but, on the contrary, I recognized his visit as an official one, and endeavored to treat him accordingly. Mr. Pilsbury states further, that all the information he obtained was of a general and superficial character; indeed, that it was difficult for him to see any one, except the Inspector or Warden. From Mr. Pilsbury's own report and his admissions to me, he had full and ample opportunities to obtain all the information he desired. Special pains was taken by our officers, and by myself, to give him any information he required. He further states that the contractors and their agents evidently looked upon him with suspicion, and avoided him. I cannot state how this may have been; they may have done so; their general acquaintance with Mr. Pilsbury may have been such as induced them to avoid him. For myself, I am free to say, that since reading his statements, in his report, referring to me, I would not care to cultivate his acquaintance, or esteem familiarity with him as particularly desirable, though at the time I met him at Sing Sing, I had no other feelings towards him but those of respect.

Permit me, in conclusion, to say, that I would have been pleased, at any time, to have gone with any person the Governor desired to send through our prisons, and to have given him any information required. It has been my endeavor, at all times, to conduct the affairs of our prisons in a manner that should stand the closest scrutiny, and challenge the fullest investigation. There has been no time at which the Inspectors would not have been happy to have made to the Governor, or to any one whom he might appoint, a full exhibit of our affairs. I have endeavored, thus far, to discharge the duties of the office faithfully; my whole aim has been that our prisons should be economically and honestly managed, at the same time, if possible, make them self-

sustaining; this end would have been secured last year but for the rebellion.

It has been assumed and charged that I have manifested an unbecoming independence in the exercise of my office in the management of our prisons. How far these assumptions and charges have been based upon the misrepresentations made by Mr. Pilsbury to the Governor, or others, I do not know; I am not aware that they could have any other origin. While I have, I trust, a proper sense of what is fairly due to the position with which the people have honored me, I hold myself bound to the people, or those whom they may appoint over me, for a becoming as well as a faithful discharge of the duties of my office.

In connection herewith, I submit the affidavits of the officers of Sing Sing prison, in relation to the foregoing statement.

D. P. FORREST,
Inspector of State Prisons.

SING SING PRISON, *March 19, 1862.*

We do hereby certify that in August last past, during the time that Amos Pilsbury was here examining the affairs of this prison, he was shown through all the apartments of the same, had ample opportunity to make full examinations; that all facilities were rendered to him to examine our financial affairs, the discipline, mode of punishment, and all other matters connected with the prison, and that we stated to him that we should be pleased to furnish him any information he might desire, in making a full investigation of its affairs; and that during his stay, from Wednesday until Monday or Tuesday following, he was so engaged, and at no time was there any disposition manifested by either of us to prevent him from obtaining such information as he required, but to the contrary, that we done everything in our power to give him any opportunity he wished in making such examinations.

SING SING PRISON, *March 19, 1862.*

We, the undersigned, being duly sworn, say that the facts set forth in the above statement are correct and true, according to the best of our knowledge and belief.

WM. BEARDSLEY, *Agent and Warden.*

WM. H. GRANBY, *K.*

HENRY L. BUTLER, *Clerk.*

JAMES I. COLLYER, *Office Guard.*

Sworn before me, this 19th }
day of March, 1862, }

DE WITT BEARDSLEY, *Notary Public.*

All of which is respectfully submitted.

D. P. FORREST.

SCHENECTADY, *March 20, 1862.*

State of New York.

No. 92.

IN SENATE,

April 8, 1862.

GENERAL ORDERS.

- 386. (Assembly, No. 146.) An act for the relief of Joseph H. Godwin.
- 387. (Assembly, No. 210.) An act for the relief of Richard Calrow, Jr.
- 388. (Assembly, No. 124.) An act for the relief of Benjamin W. Whitcher.
- 389. (Assembly, No. 71.) An act for the establishing academical departments in the different "Union Free Schools."
- 390. (Assembly, No. 163.) An act for the relief of John N. Elmore.
- 391. (Assembly, No. 452.) An act to provide for the payment of the bonds issued by the city of New York for the defence of the National Union.
- 392. (Assembly, No. 130.) An act to authorize and require the Comptroller of the State of New York to settle with the treasurer of Essex county, in relation to rejected non-resident taxes.
- 393. (Assembly, No. 224.) An act to amend an act entitled "An act to authorize the improving and keeping in repair a certain highway in the county of Putnam, and to assess certain non-resident lands along the line of said road to pay the expense of keeping the same in repair," passed March 24, 1857.
- 394. (Assembly, No. 230.) An act supplementary to an act passed April 16, 1860, and supplementary to an act passed April 3, 1861, to provide for rebuilding a bridge in the village of Adams, Jefferson county, and for raising money by tax for that purpose, upon the town of Adams, in said county.

State of New York.

No. 93.

IN SENATE,

April 9, 1862.

GENERAL ORDERS.

395. (Assembly, No. 219.) An act to amend existing laws which prohibit fishing with nets in the Crooked lake, in the counties of Steuben and Yates, and to increase penalties for taking trout therefrom.
396. (Assembly, No. 188.) An act to facilitate the ingress of salmon into Cayuga lake, and for the protection of the same.
397. (Assembly, No. 250.) An act in relation to fees of supervisors for delivering school moneys.
398. An act for the appraisement and payment of canal damages sustained by Jane C. Wilson, Francis H. Rosseel, Charles Townsend, Charles Townsend, 2d, Louis Townsend, Geo. Townsend, George Coit, Hiram E. Howard and George Palmer, by reason of raising the canal bridge over the Erie canal on Prime street, in the city of Buffalo, Erie county, and by the raising of the grade of Prime street, in said city.
399. (Assembly, No. 192.) An act for the relief of John Copeland, for damages caused by the overflow of the Erie canal.
400. (Assembly, No. 176.) An act for the relief of C. Amelia Vernam and McNeil Seymour, administrators of the goods, chattels and credits of Abraham Vernam, deceased.
401. (Assembly, No. 187.) An act to provide for the collection of agricultural statistics in the several counties of this State.

402. (Assembly, No. 190.) An act to authorize the board of town auditors, of the town of Southeast, in the county of Putnam, to provide for the relief of families of volunteers.
403. (Assembly, No. 244.) An act to authorize the making of sidewalks and planting shade trees along highways in this State, other than in cities and incorporated villages.

State of New York.

No. 94.

IN SENATE,

April 10, 1862.

GENERAL ORDERS.

404. An act to amend the charter of the village of Dexter.
405. (Assembly, No. 256.) An act to amend an act entitled "An act to establish the grade of Flatbush avenue, in the city of Brooklyn, and to conform the adjacent and intersecting streets thereto," passed April 19, 1862.
406. (Assembly, No. 238.) An act to amend an act entitled "An act to amend an act entitled 'An act to vest certain powers in the freeholders and inhabitants of the village of Jamaica, in the county of Queens,' passed April 25, 1814, and to enlarge the powers of the corporation of said village," passed April 10, 1855.
407. (Assembly, No. 213.) An act to authorize the extending of certain streets in the city of Brooklyn, to the East river, and to the permanent bulkhead line.
408. (Assembly, 261.) An act to incorporate the fire department of the village of Corning.
409. (Assembly, No. 251.) An act to amend the charter of the village of North Watertown, Jefferson county.
410. (Assembly, No. 423.) An act to amend an act entitled "An act to incorporate the Long Island College Hospital of the city of Brooklyn," passed March 6, 1858.

REPORT

OF THE

Regents of the University of the State of New-York,

ON THE LONGITUDES OF

THE DUDLEY OBSERVATORY,
THE HAMILTON COLLEGE OBSERVATORY,
THE CITY OF BUFFALO,
THE CITY OF SYRACUSE.

ALBANY :
PRINTED BY C. VAN BENTHUYSEN.
1862.

State of New York.

No. 95.

IN SENATE,

April 5, 1862.

REPORT

OF THE REGENTS OF THE UNIVERSITY, ON THE DETERMINATION OF LONGITUDES IN THIS STATE.

UNIVERSITY OF THE STATE OF NEW-YORK : }
Office of the Regents, Albany, April 5, 1862. }

TO THE HON. ROBERT CAMPBELL,

Lieutenant Governor and President of the Senate.

SIR :

I HAVE the honor to transmit to you a Report of the Regents of the University, on the determination of longitudes in this State, pursuant to chapter 784 of the Laws of 1857, and chapter 333 of the Laws of 1858.

Yours very respectfully,

JOHN V. L. PRUYN,

Chancellor of the University.

To the Hon. the Legislature of the State of New-York.

The Regents of the University respectfully report :

That in the year 1857, an appropriation was made by the Legislature to the Regents, which was continued and renewed in 1858, to defray the expenses of ascertaining the true meridian of such important locality or localities as the Board should prescribe.

The most elaborate determinations of longitude in this country have been made by the United States Coast Survey. In these determinations, Harvard College Observatory at Cambridge (Mass.) was made the initial point, its longitude from the Royal Observatory at Greenwich having been ascertained by repeated transfers of chronometers and numerous astronomical observations. The method adopted in the Coast Survey determinations, and in those now reported, has been that of telegraphic longitude measurements, known in Europe as the American method. In this State, the longitude of only one point, the private Observatory of Mr. Runkle, at the corner of the Second avenue and Eleventh-street in the city of New-York, had been thus determined, prior to the year 1857.

Desirous to bring to the work committed to them the highest accuracy and the best practical skill, the Regents accepted a proposition from the Trustees of the Dudley Observatory to determine the longitude of that Observatory; it being understood that the work should proceed with the aid, and under the direction, of the Scientific Council of that Institution, of which Professor Bache, Superintendent of the Coast Survey, was a member. A copy of a paper containing the views of the Council as to the manner in which the work should be executed, addressed to a Committee of this Board, is herewith submitted.

The Regents afterwards accepted a proposition from the Trustees of Hamilton College, first, to determine the longitude of their recently erected Observatory, and then that of several other important points in the State.

Full reports of the observers are herewith submitted, from which it will appear that the longitude of the following points has been ascertained :

The Dudley Observatory ;

The Hamilton College Observatory ;

The Light-house in the Harbor of Buffalo, and

The Court-house in the City of Syracuse.

Arrangements are in progress for determining the longitude of two other points, one near the northern boundary of the State and one near the Pennsylvania line; and the Regents hope to be able, with the balance of the appropriation at their control, to add two others. The position of nine points in the State will then have been ascertained, furnishing most important aid in constructing an accurate topographical map of the State; a work, the great importance of which has been fully shown by recent events in the history of our country, and which will be imperatively demanded at no distant day.

A tabular statement of results is hereto appended, together with an account of the expenditures of the appropriations to this time.

All which is respectfully submitted,

By order of the Regents.

JOHN V. L. PRUYN,

Chancellor of the University.

Dated April 5, 1862.

REGENTS OF THE UNIVERSITY.

IN ACCOUNT WITH THE LONGITUDE APPROPRIATION.

DR.

1858,		
April 29.	To cash received from the Comptroller, being part of the appropriation of April 5th, 1857.....	\$1000 00
1859,		
April 13.	To balance of ditto	1000 00
1860,		
April 12.	To appropriation of April 17th, 1858	2000 00
		<u>\$4000 00</u>

CR.

1858,		
April 29.	By cash paid Trustees of Dudley Observatory....	\$1000 00
1859,		
July 28.	Ditto Trustees of Hamilton College, in part for determining the longitude of the Observatory..	500 00
1860,		
Feb. 20.	Ditto balance for ditto.....	500 00
Dec. 22.	Ditto for the longitude of Buffalo, in part	250 00
1861,		
Aug. 17.	Ditto balance for ditto	250 00
1862,		
Feb. 5.	Ditto for the longitude of Syracuse	333 33
	Balance on hand	1166 67
		<u>\$4000 00</u>

DOCUMENTS

Accompanying the Report of the Regents of the University,

ON LONGITUDE.

1c
Aug. -
1862,
Feb. 5.

EXTRACTS

FROM A LETTER OF THE SCIENTIFIC COUNCIL OF THE DUDLEY OBSERVATORY.

HON. JOHN V. L. PRUYN,
Committee of the Regents of the University.

SIR :

IN conformity with your request, we have the honor to present to you a concise statement of the reasons why in our judgment, as already orally communicated to you, the appropriation of two thousand dollars, made by the last Legislature for ascertaining the true meridian of such important locality or localities as your Board may prescribe, can be rendered most available for the end desired, by being assigned to the Dudley Observatory, in order to establish the precise meridian of that institution.

We will present these reasons in as condensed a form as possible, presuming that your desire is that they should be intimated rather than developed.

1, 2. * * * * * *

3. The only point in the State whose meridian is now determined with the precision of recent scientific methods, is situated in the city of New-York; and it is at this point that we would recommend the necessary corresponding observations to be carried on. It is the site of the Coast Survey astronomical station at which, in the year , the observations were made for the longitude of the city of New-York, and which constitutes a point in the system of longitude measurements of the Coast Survey upon which all our American longitudes depend. The points north of the 38th parallel are Washington, Philadelphia, Cincinnati, New-York, Cambridge and Bangor. Three extended and costly chronometric expeditions have been made to connect this system of points with European observatories; and so small are the errors in their relative positions, compared with

those inevitable in a transatlantic measurement, that the connection of one is that of all. Should the proposed submarine cable be successfully laid, we have every reason to believe that it would speedily be called into service to afford still higher precision to the measured difference of longitude between the chief European observatories and the telegraphic longitude stations of the United States Coast Survey.

Moreover, apart from these considerations, the propriety of selecting the city of New-York, the great seaport and commercial metropolis of the Union as well as of the State, is too evident to require argument.

4. It is doubtless known to the Regents of the University, as of course to yourself, that the method of telegraphic longitude measurements — a method so far surpassing all others in delicacy and precision, that no thought of any other can be entertained between places connected by a telegraphic wire—is pre-eminently a national one, known in Europe as the American method. It was devised, developed, and perfected solely by officers of the Coast Survey of the United States, and even the subsidiary apparatus is the invention of the employees of this national institution. The method is even now but vaguely understood and imperfectly practised abroad. The system of longitude-points to which we have referred, is the Coast Survey series.

In this connection, it will be seen to be an important fact that the Superintendent of the Coast Survey is one of our number, and that he is desirous of aiding the enterprise in every way not inconsistent with his official duties. Also that another of our number, and the one to whose direction the Dudley Observatory has been confided, is that officer of the Coast Survey to whom the charge of the telegraphic longitude-measurements has for more than six years been intrusted. The assistants at the Observatory are those whose duties are upon the telegraphic longitude corps; and all the observations could be made, and the extremely laborious and extended reductions and computations carried on, by a corps specially trained to the work, and the only corps in any country thoroughly understanding and accustomed to this peculiar duty.

5. Another most important consideration is this : that the objects of the Dudley Observatory are twofold, viz. to contribute both to the advance of science, and to public utility. The establishment and preservation of an accurate standard of time is one of the first steps of an observatory; and from its position, the Dudley Observatory is provided with peculiar opportunities for rendering its standard time

conducive to the best interests of the commonwealth, and must assume the corresponding responsibilities. The difference of longitude is the difference of local time, and the proposed measurement would furnish all that can be desired for converting the time of the Dudley Observatory into the corresponding time of any point in the city of New-York.

The near approach to identity of its meridian with that of the great centre of commerce; the connection of the two points by accurate geodetic triangulation under national superintendence; the various telegraphic lines which, following the course of the great railroad thoroughfares, here converge to a focus, unite to render the Dudley Observatory, in our judgment, that point in the State, the determination of whose longitude is the most important, as well as the most appropriate. For, its meridian once established with the highest precision of modern science, it can alike furnish time accurate to the fraction of a second for the shipping of New-York, provide the last remaining element of precision to the topography of the Hudson, and constitute the means by which the great network of well-determined longitude points may be extended to the farthest limits of the State.

6.

7. The only remaining point to which we would refer, is the method employed, as bearing upon the expense of the determination. It is well known that the labor and expense of any measurement increases with the precision in a more than cubic ratio. The determination in question is of course to be made with the highest precision known to science, and but a small proportion of the longitude measurements of the Coast Survey have been found practicable for the sum now appropriated by the Legislature for the purpose. Stations at each of the terminal points are to be equipped with complicated, peculiar, and expensive apparatus contrived and constructed for this special object; a long series of observations is to be made under circumstances designedly and systematically varied in every possible way; natural and artificial obstacles of various kinds to be surmounted, and difficulties to be obviated; and when the necessary observations shall have been attained, they form but the basis on which the superstructure of reductions and computations is to be founded. Months of labor are to be expended upon the observations, before the final result can be attained. The records of the chronographs and telegraphic fillets are to be translated into figures; the apparent places of the observed stars are to be obtained with close accuracy; the adjustments and position of each instru-

ment are to be deduced, computed, and the corresponding corrections applied; the observations of the different astronomers employed upon the work are to be freed from the influence of individual peculiarities; and, lastly, so large a mass of determinations is to be obtained and combined, that no increase of accuracy in the mean can be reasonably expected to follow from a farther increase of their number.

* * * This meridian (that of the Observatory) once ascertained, all subsequent longitude determinations for the State of New-York will be greatly facilitated; and the positions of other prominent and important places, such as Buffalo, Oswego, Rochester, Syracuse, &c., may be determined on the one hand with much greater exactness, or on the other with all the accuracy needed for commercial purposes, say within the fraction of a second, at a much less cost than would otherwise be feasible.

We remain, Dear Sir, with great respect,

Your obedient servants,

A. D. BACHE,
JOSEPH HENRY,
BENJAMIN PEIRCE,
B. A. GOULD JR.

MARCH 1858.

REPORT OF DR. GOULD,
ON THE LONGITUDE OF THE COAST SURVEY STATION NEAR
THE DUDLEY OBSERVATORY.

LETTER FROM PROF. A. D. BACHE, TO HON. J. V. L. PRUYN.

COAST SURVEY OFFICE, }
April 8, 1861. }

DEAR SIR :

I SEND herewith the Report of Dr. GOULD on the difference of longitude of the Coast Survey station at the Dudley Observatory, Albany, and of Mr. RUTHERFORD's Observatory at New-York.

The longitude of Mr. RUTHERFORD's Observatory is, from the Coast Survey data up to date :

$4^{\circ}55'55''.63$, or
 $73^{\circ}58'54''.43$;

which gives the longitude of the Coast Survey station, thirty-five feet east of the meridian circle at the Dudley Observatory, from Greenwich,

$4^{\circ}54'58''.18$ in time, or
 $73^{\circ}44'32''.68$ in arc.

Yours very respectfully,

A. D. BACHE,
Superintendent U. S. Coast Survey.

HON. J. V. L. PRUYN,
Chairman of Committee of Regents of University of New-York.

FROM DR. GOULD, TO PROF. BACHE.

PROF. A. D. BACHE,
Superintendent U. S. Coast Survey.

DEAR SIR :

IN conformity with your wishes, I have the honor to submit an abstract of my report upon the difference of longitude of the cities of Albany and New-York, as deduced from the observations made for the purpose in 1858.

The observers were MESSRS. GEORGE W. DEAN and EDWARD GOODFELLOW, assisted by MESSRS. A. E. WINSLOW and A. T. MOSMAN; and the plan of observation and modes of reduction and computation have been in all respects according to the usual practice of the Coast Survey for telegraphic measurements of longitude.

The station-point in Albany was in a small wooden building erected for the purpose in the grounds of the Dudley Observatory, the block on which the transit-instrument rested being 35.075 feet to the eastward of the meridian-circle. The New-York station was in the private Observatory of LEWIS M. RUTHERFORD, Esq., at the corner of Second avenue and Eleventh-street, and two feet eleven inches east of the point occupied by Mr. WALKER in the longitude determinations made by him for the Coast Survey in 1848.

For transit instruments, the two portable instruments of the Coast Survey, Nos. 4 and 6, were employed; the former at Albany, the latter at New-York. They are essentially similar; each having a clear aperture of about twenty-eight Paris lines, and a focal length of forty-six inches, and being used with an eye-piece magnifying about 100 times. Their diaphragms were provided with five equidistant "tallies," each consisting of five vertical threads at intervals of 2.5 equatorial time, the spaces between the nearest threads of two adjacent tallies being about 5".

In Albany, the transit instrument was mounted in the ordinary way; its iron frame resting upon a granite block three feet wide and one foot thick, which was imbedded in the ground to the depth of three feet, and rose to a height of thirty inches above the flooring. In New-York, this mode of mounting was impracticable; and by permission of Mr. RUTHERFORD, the Y-plates of his own transit instrument were cut away somewhat, and readjusted for the reception of our telescope, which was then swung between his two freestone piers.

The Hardy clock of the Coast Survey was suspended upon the brick foundation-wall of the northwest basement room of the Dudley Observatory, this position seeming to afford the best security against sudden or extreme variations of temperature. A pair of insulated copper wires passing from the clock to the station, connected in one galvanic circuit the clock, the two observing-keys at the transit instrument, a commutator or circuit-changer, and two chronographs, the one a spring-governor and the other an ordinary telegraph register. The Kessels clock was hung upon Mr. RUTHERFORD's clock-pier, and was included in a galvanic circuit similar in all respects to that at Albany.

The ground connection at each station was formed by a large copper plate, buried some feet deep in the earth, and was connected with the office of the New-York, Albany and Buffalo Telegraph Company by a temporary line of No. 9 iron wire; about a quarter of a mile being put up specially for the purpose in Albany, and about three miles in New-York. The Company very liberally placed their best wires at our disposal after nine o'clock every evening; and through the obliging courtesy of JAMES D. REID, Esq., the General Superintendent, and of Messrs. CUTLER and WHITING, the Local Superintendents, every desired facility was afforded us. The wires employed were those designated in the office as Nos. 5 and 6. The latter, No. 6, weighs 400 pounds to the mile; and passing up the west bank of the Hudson to Troy, where it crosses the river on the bridge, descends the river on the east side, following the high road to New-York. Its entire length between the two stations, as nearly as I can estimate, is 179 miles. Wire No. 5 passes down the west side of the river to a point seven miles below Newburgh, where it crosses by a submerged cable. It is at least 25 miles shorter than the other, but is much smaller, weighing only 250 pounds to the mile: its length from station to station may be estimated as 153 miles.

The programme adopted for the work, after the instruments had been satisfactorily adjusted, contemplated, in the first place, observations for determining the errors of azimuth, collimation, and clock-time at each station on every clear evening till the telegraphic exchanges of star-signals should be completed; and both before and after these exchanges, on the nights when they were made. Secondly, a satisfactory series of star-transits telegraphically exchanged on three nights in the first position of observers, viz. with Mr. DEAN in Albany and Mr. GOODFELLOW in New-York; together with observations on two nights for determining the personal equation. Thirdly, a similar set of observations on three nights for longitude-signals, and two for personal equation in the second position of observers, viz. with Mr. GOODFELLOW at Albany and Mr. DEAN at New-York. And, finally, a sufficient number of observations on circumpolar and other stars over all the twenty-five threads of the diaphragm, to determine the intervals of these threads as perfectly as possible. In addition to this general programme, it was arranged that all the circumstances of the observations should be varied as much as possible; sometimes the full strength of the batteries, and sometimes very few cups, being employed, and the direction of the current being reversed from time to time. During the first part of each night's

work, the signals were to be recorded by means of the Hardy clock at Albany; and during the last part, by means of the Kessels clock at New-York. And as usual, also, in all our telegraphic longitude-determinations, reversals of each transit-instrument, and readings of the ether-level, were to be made alternately with the observations of transits. The exchange of star-signals was to be regarded as satisfactory when the transit of the star over not less than fifteen threads was observed at each station, and well recorded upon both chronographic registers at both stations. The minimum number of such exchanges required in each position of observers was sixty, or an average of twenty stars a night.

This programme was thoroughly carried out in all points, notwithstanding various obstacles which embarrassed our operations to an extraordinary degree; and the general principle was carefully followed, that no opportunity should be lost of varying the incidental circumstances of the observations as often and as much as possible. For instance, the strength of the galvanic current was varied from the maximum to the minimum amount consistent with convenience of telegraphic communication; the different wires were often interchanged, etc. It is needless to add that special care was taken that the position of the observing-keys should be such as to avoid unnecessary fatigue of the observer's hand or arm.

The experience of previous years had shown that the most desirable magnitude for the signal-stars is between the fifth and sixth degree. In selecting the list of stars to be employed, this was kept in mind; yet stars of all magnitudes between the second and seventh were included in the list. The mean magnitude of all the signal stars observed was $5^m.3$, according to the estimates carefully made, for another purpose, under my direction.

All preliminary work having been completed, the regular series of observations was begun May 12, and continued until June 18. During this period, there were made for the determination of time and instrumental corrections, at Albany, 96 observations of circumpolar and 138 of zenithal and equatorial stars, the average number of threads noted at each observation being 21; and at New-York, 50 observations of circumpolar and 195 of other stars, each over 18 threads upon an average. Of course the telescope was uniformly reversed during transits of circumpolars, to eliminate and determine the error of collimation, except in those cases where the observations were intended for the determination of the thread-intervals of the diaphragm.

Exchanges of star-transits by the telegraph between the stations were made in the First position of observers, May 24, 28, June 2; and in the Second position, June 8, 17, 18. Upon these six nights, 180 complete observations were telegraphed from Albany to New-York, and 205 from New-York to Albany; each observation consisting, upon the average, of transits over 19 threads. The number of different stars whose transits were thus exchanged was 52. The total number of observations satisfactorily exchanged, and for which the signals from each place were well recorded upon both registers at both stations, is 157; and the average number of threads at each station for these observations is 18.

The comparisons for personal equation between Messrs. DEAN and GOODFELLOW were made on the nights of June 5, 6, 19, 20; complete observations being obtained on 86 stars. For each of these stars, one observer noted the transits over the 1st, 3d and 5th tallies; while the other took the intermediate ones, the 2d and 4th: And since they alternated in this arrangement, the mean result of each successive pair of stars is derived from 25 taps by each observer, and is free from any error originating in the telescope itself. Observations were made in like manner for determining the personal differences between Messrs. DEAN and GOODFELLOW, and myself.

The stars observed for instrumental corrections and local time were selected from the lists of 48 circumpolars and 132 "time-stars," specially prepared by me, heretofore, for the use of the Coast Survey. The observations of each night (and, when needful, for the different parts of each night) were combined according to the method of least squares. The following table gives the results for the corrections due to the instrument in azimuth and collimation, and for the clock-correction, from May 22 to June 18. The column *s* shows the number of stars employed in the determination, and the probable error of each determination is affixed.

INSTRUMENTAL CORRECTIONS NEEDED AT ALBANY.

Date.	Time.	<i>c</i>	<i>a</i>	<i>At</i>	<i>s</i>
May 22	12 ^b 30 ^m	+0.013	-0.189 ± 0.046	-1.591 ± 0.034	7
24	13 0	+0.059	-0.308 0.030	-5.077 0.043	11
27	15 0	.....	-0.174 0.013	-11.933 0.025	15
28	13 0	+0.026	-0.258 0.013	-14.380 0.022	10
	18 0	+0.048	-0.242 0.018	-14.924 0.020	11
29	14 0	.....	+0.038 0.020	+3.532 0.028	11
June 1	13 15	+0.034	+0.155 0.015	+3.569 0.024	9
2	13 15	+0.045	-0.059 0.029	+3.515 0.049	12
	18 15	+0.039	+0.124 0.018	+3.209 0.023	12
4	13 30	.....	.....	+1.834 0.067	4
7	14 0	+0.055	+0.167 0.024	-0.847 0.032	9
8	14 0	+0.037	+0.027 0.021	-1.952 0.022	11
	18 30	-0.104	+0.198 0.013	-2.259 0.016	4
10	15 0	+0.057	+0.263 0.011	-5.716 0.011	9
16	14 15	+0.017	-0.051 0.025	-24.283 0.029	13
17	14 40	-0.022	-0.053 0.032	-28.198 0.042	10
	19 0	+0.005	-0.100 0.028	-28.846 0.024	9
18	14 30	+0.006	-0.090 0.017	-31.679 0.028	16
	19 0	+0.006	-0.016 ± 0.019	-32.285 ± 0.016	11

INSTRUMENTAL CORRECTIONS NEEDED AT NEW-YORK.

Date.	Time.	<i>c</i>	<i>a</i>	<i>At</i>	<i>s</i>
May 22	12 ^b 30 ^m	-0.255	+1.982 ± 0.024	-0.965 ± 0.024	10
24	13 0	-0.218	+2.278 0.045	-0.952 0.045	9
	17 0	-0.190	+2.521 0.005	-1.064 0.010	7
28	13 0	-0.077	-0.281 0.032	-5.518 0.024	10
	18 0	-0.096	-0.204 0.042	-5.859 0.033	7
30	13 0	-0.094	+1.725 0.009	-2.556 0.023	10
June 1	13 30	.....	-0.457 0.027	-1.942 0.027	12
2	13 0	+0.039	-0.085 0.037	-2.459 0.027	10
	18 0	+0.025	+0.149 0.023	-2.815 0.021	8
3	13 45	+0.042	+0.196 0.013	-1.124 0.016	4
7	14 0	+0.026	-0.029 0.025	-2.774 0.014	9
8	14 0	+0.004	+0.256 0.028	-2.603 0.018	6
	19 0	+0.026	+0.082 0.019	-2.726 0.019	10
10	13 30	+0.020	-0.216 0.021	-2.655 0.020	10
17	14 0	+0.034	-0.198 0.017	-4.498 0.016	12
	18 30	.....	-0.210 0.081	-4.764 0.053	5
18	14 0	+0.010	-0.231 0.016	-4.319 0.015	12
	19 15	+0.072	-0.100 ± 0.021	-4.380 ± 0.022	11

The horizontal lines indicate an intentional change made in the adjustment of the instrument, or of the clock.

It will be seen that the amount of motion in azimuth is quite considerable, on some nights. In Albany, this seems to be due, to some extent, to the motion of the hill on which the Observatory stands; a motion, the existence of which is abundantly confirmed by other observations, and which I found very manifest in the great meridian-circle of the Observatory. In New-York, the motion, though often greater, was less regular, and indeed less capable of measurement, by reason of the proximity of the instrument to the paved thoroughfares and massive mason-work of the city. A regular increase of the azimuthal correction during the evening is very palpable, the effect corresponding to a motion of the western end of the axis in a southerly direction.

The values of the corrections in collimation and azimuth, and of the clock-rates deduced from the tables already given and employed in the reduction of the longitude signals, on the six "telegraph nights," are as follows. They were assumed as constant during the exchange of signals, except the azimuth of the transit instrument in New-York, which has been assumed as varying proportionally to the time on four of the nights.

Collimation and Azimuth Corrections, and Hourly Clock-rate, Albany.

Date.	Time.	c	a	Hourly rate.
May 24	13 ^h 0 ^m	+0.05	-0.30	-0.072
28	15 15	+0.05	-9.25	-0.110
June 2	15 45	+0.05	+0.08	-0.040
8	16 0	+0.05	+0.10	-0.060
17	17 0	+0.05	-0.06	-0.150
18	16 45	+0.05	-0.08	-0.135

Collimation and Azimuth Corrections, and Hourly Clock-rate, New-York

Date.	Time.	c	a	Hourly rate.
May 24	13 ^h 0 ^m		+2.278	
	17 0	-0.19	+2.251	-0.030
28	15 15	-0.08	-0.250	-0.060
June 2	13 0		-0.085	
		+0.03		-0.050
	18 0		+0.149	
8	14 0		+0.256	
		+0.02		-0.020
	19 0		+0.082	
17	16 0	+0.03	-0.200	-0.050
18	14 0		-0.231	
		+0.04		-0.020
	19 15		-0.104	

For the telegraphic signals of transits of stars exchanged for longitude, the records upon each of the four chronographs have been independently read off by two different assistants; and all cases where the discordance between the two readings exceeded $0^{\circ}.02$, have been examined and corrected. The means of the two readings furnish the data employed. There are thus at our disposal four complete records of every telegraphic signal made during the observation; each signal giving the time of an observed transit over a single thread, and the number of such signals averaging, as already stated, 18 at each station for each star exchanged. The records of the Morse register and of the Spring-governor at each station are usually accordant within narrow and well-established limits, depending upon the amount of irregularity in the motion of the one or the other of these two chronographs, between two successive clock-beats. When their discrepancy has exceeded a prescribed limit of permissible discordance, the records have been again examined, and one or both values rejected, if the circumstances of the case seemed to require it. The mean between the readings of the Spring-governor sheets and the Morse-register fillets was then adopted as the record of the transit at that station. The records at the two stations differ from each other theoretically only by the interval of time required by the telegraphic signal for traversing the wire once in each direction; for the clock-signals, which mark the beginning of each second, are recorded earlier at the station where the clock itself is, while the observation-signals given by the observer at the other station are recorded later on the same register, and *vice versa*. A mean between the times recorded at the two stations will thus be free from the effects of this delay in transmission, while the difference between them will afford a measure of its amount.

The moments of observed transit over the several threads, being thus determined, have been reduced to the corresponding time for the mean of all the threads, to permit the application of PEIRCE's Criterion, which has been employed in every case, to exclude bad observations and to guard against unauthorised rejections.

Finally, the mean of the several threads, corrected for errors of azimuth and collimation, was adopted as the time of transit, and the interval between the times for the two stations afforded the desired measurement of the longitude.

The following table exhibits the values furnished by different stars and on different nights. The stars are designated by their numbers in the Catalogue of the British Association, from which the list was selected. The values rejected by the Criterion, and therefore not incorporated into the result, are enclosed in brackets.

INDIVIDUAL MEASUREMENTS OF LONGITUDE.

Star.	May 24.	May 28.	June 2.	June 8.	June 17.	June 18.
4741		57.507				
4758		.624				
4783		.493				
4797		.417				
4816		.357				
4841		.663				
4870	57.568	.513				
4897		.228	57.457			
4942		.425	.539			
4974	.493	.506	.454			
4991	.540	.370	.482			
5026	.285		.370			
5048	.532	.490	.496			
5075		.428	.532			
5092		.570				
5122		.412	.718			
5143	.425	.403	.560		57.449	
5178	.171	.267	.443		57.779	
5192	.564	.476	.388	57.252	57.309	
5236		.371		.251	[58.144]	57.204
5259	.370	.445	.486	.429	57.544	.459
5302	.475	.488	.553	.458	.430	.442
5316		.542			.146	
5348		.566	.690		.321	.310
5385	.382	.464	.539		.538	.513
5432	57.353	.377	.356		.569	.485
5444						.228
5480		.269	.460	[.140]	.280	.356
5496		.580	.368	.689	.630	.471
5535		.676		.645		.340
5546		.299		[.068]		.304
5596		.491	[.972]	.153	.189	.330
5617		.442	.646	.605	.662	.425
5644		.660	.723		.550	.427
5714		.318	.589			
5731		.598	.458	.277	.537	.598
5775		.521				.264
5795		57.622		.668		[.118]
5834			.474	.660	.372	.403
5847			.511	.292	.683	.377
5874			.457	.248	.700	
5895			.436			[.170]
5922			57.459	.424	.266	.347
5944				.388	.594	.525
5966					.505	.387
6005				.572	.359	.279
6033				.429	.305	[.097]
6066				.272	.556	.491
6084					.448	.459
6109					.421	57.224
6147				57.554	.374	
6178					57.475	

From these several determinations, we find the following mean values :

	First Position of Observers.			Second Position of Observers.		
	May 24.	May 28.	June 2.	June 8.	June 11.	June 18.
Mean value of diff. longitude....	57°.430	57°. 57	57° 57'.505	57°.434	57°.464	57°.385
Mean error of one measurement.	± 0.109	± 0.120	± 0.099	± 0.186	± 0.164	± 0.098
Mean error of result.....	± 0.031	± 0.020	± 0.019	± 0.043	± 0.032	± 0.029
Corresponding weight	80	250	277	66	128	250

And combining the several mean values of the longitude according to their respective weights,

Mean difference of longitude : First position .. 57°.481

“ “ “ : Second position, 57.414

Both 57.448

Had we employed the five additional measurements which were excluded by the Criterion, this value would have been increased by 0°.003.

A thorough discussion of the observations for personal equation gives us the following results, for the interval by which Mr. GOSFELLOW tapped later than Mr. DEAN :

Date.	N° Stars.	G — D
June 5	26	$+0.043$
6	22	$+0.016$
19	20	$+0.104$
20	20	$+0.081$
Mean of four nights,		$+0.061$
“ 88 stars..		$+0.059$

or, rejecting four very discordant stars, and three which were discredited by the observers at the time, the remainder give

Date.	N° Stars.	G — D
June 5	25	$+0.033$
6	20	$+0.009$
19	18	$+0.082$
20	18	$+0.057$
Mean of first two nights =		$+0.021$
“ last two nights =		$+0.069$
“ all four nights =		$+0.045$

We may, by various modes of arranging and classifying the stars observed, arrive at some conclusions, positive or negative, regarding

the source of the marked difference between the personal equation of one or both observers on June 5 and 6, and that existing June 19 and 20.

The mean of the equatorial reductions to the mean for the fifteen threads of tallies 1, 3, 5 in the New-York transit N° 6, Lamp West (with which instrument, and in which position, all four series of observations were made), is $-0^{\circ}.012$.

For the 10 threads of tallies 2 and 3, the reduction is $+0^{\circ}.018$.

So that the value of $G - D$ should be increased when Mr. DEAN led, and decreased when Mr. GOODFELLOW led, by $0^{\circ}.030 \text{ sec } \delta$. The smallest value of $\text{sec } \delta$ for any of the stars is 1.07, the largest 1.31, the mean value 1.14; so that the correction for inequalities of the diaphragm is $\pm 0^{\circ}.034$.

Applying this correction, we find

Date.	DEAN led.		GOODFELLOW led.		Mean.
	$G - D$	N°	$G - D$	N°	$G - D$
June 5	$+0.026$	13	$+0.039$	12	$+0.033$
6	0.010	10	0.007	10	0.009
19	0.992	9	0.072	10	0.082
20	$+0.051$	9	$+0.061$	10	$+0.056$
	0.045		0.045		$+0.045$

The absolute accordance of the means is of course purely accidental; but it shows clearly that the small nervous disturbance incident to the leading, and to the observation of 15 threads rather than 10, did not affect the amount of personal difference.

Next, dividing the stars observed for personal difference into two classes according to their brightness — the first class including all brighter than the 5th magnitude, and the second all fainter than this limit, we find, for the values of $G - D$,

Date.	Class I.		Class II.	
	$G - D$	N°	$G - D$	N°
June 5	$+0^{\circ}.020$	13	$+0^{\circ}.051$	12
6	$+0.014$	12	$+0.006$	10
19	$+0.047$	10	$+0.127$	8
20	$+0.056$	7	$+0.056$	12
Mean	$+0.034$		$+0.060$	

The merest glance at these values shows that for the stars below the fifth magnitude, the personal equation is much smaller and very much more constant than for the fainter stars. As already stated, the mean magnitude of the signal-stars exchanged was $5^m.3$; so that the corresponding personal difference would be decidedly below the value $+0''.045$, found as the mean of all.

It therefore seems the more judicious course to take the simple mean between the results obtained in the two positions of the observers, or, in other words, to adopt the value $+0''.0335$ which these results indicate, and to regard the personal equation as thus entirely eliminated. The resultant value for the longitude will differ by only $0''.003$ from that obtained by applying the personal equation $+0''.040$ to each individual determination.

The value adopted is, therefore,

Albany east of New-York, $57''.45$;

which cannot, I think, differ more than one or two hundredths of a second from the truth.

If, instead of combining our results according to their dates, we include in one series all the measurements made in each position of observers, the values deduced will differ very slightly from the preceding. The figures will be

	All Observations.		Applying Criterion.	
	N° Stars.	Diff. Longitude.	N° Stars.	Diff. Longitude.
In first position ..	76	$57''.484 \pm 0''.010$	75	$57''.477 \pm 0''.009$
" second position,	78	$57''.417 \pm 0''.012$	72	$57''.428 \pm 0''.011$
Mean	154	$57''.450 \pm 0''.008$	147	$57''.453 \pm 0''.008$

The measurements by the respective clocks are

	I Position.		II Position.		Mean.	
	N°	Dif. Lon.	N°	Dif. Lon.	N°	Dif. Lon.
Albany clock	43	$57''.462$	36	$57''.421$	79	$57''.444$
New-York clock .	32	$57''.497$	36	$57''.435$	68	$57''.464$
Mean by weights .	75	$57''.477$	72	$57''.428$	147	$57''.453$

The observations in the first and second position differ theoretically by twice the amount of the personal equation; those recorded by the different clocks differ theoretically by twice the difference of the time required for the transmission of the signals in the two directions.

A strong corroboration of our adopted value is furnished by an independent subsidiary discussion of the right-ascensions of the stars employed. The observations made at the station whose clock is graduating the record, give for each star a value

$$\Delta\alpha = \Delta t - \omega;$$

but observations made by means of the clock at the other station, furnish the analogous quantities

$$\pm \Delta\alpha + \lambda = \Delta t - \omega,$$

the upper sign applying when the Eastern clock is in circuit. Inasmuch as every exchange of star transits thus gives one value of $\Delta\alpha$ and one of $\Delta\alpha \pm \lambda$, we may combine the mean of the values obtained for the former with the mean of each of the latter, and so obtain a value for the longitude, which, although not derived from data strictly independent, may yet be fairly regarded as an independent determination. Of course such a value is inferior in precision to that which is free from the influence of errors in the adopted clock-correction and personal equation: still the following table shows how fully this mode of determination corroborates the previous result. The values of $\lambda \pm \Delta\alpha$ are corrected for personal equation by subtracting, on the first three nights, and adding on the last three, the quantity 0^h.034.

STAR.	Albany Clock.				New-York Clock.				Mean $\Delta\sigma$.	Alb. Obs.		N.Y. Obs.	
	Alb. Obs.		N.Y. Obs.		Alb. Obs.		N.Y. Obs.						
	BAC	$\Delta\sigma$	N°	$\lambda + \Delta\sigma$	N°	$\lambda - \Delta\sigma$	N°	$\Delta\sigma$	N°	λ	wt	λ	wt
4741	+0.036	1	+57.509	1					+0.036			57.473	6
4758	+0.005	1	57.595	1					+0.005			.590	6
4783	-0.026	1	57.485	1					-0.026			.459	6
4797	-0.528	1	57.911	1					-0.528			.383	6
4816	-0.176	1	57.499	1					-0.176			.323	6
4841	-0.163	1	57.466	1					-0.163			.629	6
4870	+0.175	2	57.682	2					+0.175			.507	8
4897	-0.768	2	56.841	2					-0.768			.309	8
4942	-0.127	2	57.321	2					-0.127			.448	8
4974	+0.531	3	57.981	3					+0.531			.450	10
4991	-0.074	3	57.504	3					-0.074			.430	10
5026	+0.118	2	57.411	2					+0.118			.293	8
5048	-0.022	3	57.450	3					-0.022			.472	10
5075	-0.029	2	57.417	2					-0.029			.446	8
5092	+0.063	1	57.599	1					+0.063			.536	6
5122	+0.152	2	57.683	2					+0.152			.531	8
5143	-0.001	4	57.441	4					-0.001			.442	12
5178	-0.356	4	57.040	4					-0.356			.396	12
5192	+0.082	5	57.473	5					+0.082			.391	13
5236	-0.536	4	56.724	4					-0.536			.260	12
5259	+0.105	6	56.560	6					+0.105			.455	14
5302	-0.099	5	57.389	5	+57.579	1	-0.125	1	-0.108	57.471	6	.497	13
5316	+0.334	1	57.514	1	57.537	1	+0.171	1	+0.252	.589	6	.262	6
5348	-0.144	2	57.205	2	57.780	2	-0.185	2	-0.164	.616	8	.369	8
5386	-0.148	2	57.411	2	57.474	2	-0.047	2	-0.098	.376	8	.509	8
5432	-0.070	2	57.491	2	57.327	2	+0.001	2	-0.035	.292	8	.526	8
5444	+0.266	1	57.528	1					+0.266			.262	6
5480	+0.060	3	57.352	3	57.490	2	-0.160	4	-0.028	.462	8	.380	8
5496	-0.140	3	57.490	3	57.378	2	+0.056	2	-0.002	.316	8	.552	10
5535	-0.074	2	57.452	2	57.574	1	+0.068	2	-0.027	.547	6	.479	8
5546	-0.266	2	56.954	2	57.810	1	-0.545	1	-0.359	.451	6	.313	8
5596	+0.198	3	57.456	3	57.520	2	+0.180	2	+0.191	.711	8	.265	10
5617	-0.172	3	57.426	3	57.529	2	-0.019	2	-0.111	.418	8	.537	10
5644	-0.060	2	57.462	2	57.488	2	+0.169	2	+0.054	.542	8	57.408	8
5714					57.479	2	-0.060	2	-0.090	.419	8		
5731					57.523	5	-0.034	5	-0.034	.489	13		
5775					57.620	2	-0.178	2	-0.178	.442	18		
5795					57.557	3	-0.077	3	-0.077	.480	10		
5834					57.396	4	-0.126	4	-0.126	.470	12		
5847					57.585	4	-0.152	4	-0.152	.433	12		
5874					57.281	3	+0.198	3	+0.198	.479	10		
5895					56.214	2	+0.090	2	+0.090	.394	8		
5922					57.336	4	+0.056	4	+0.056	.392	12		
5944					57.748	3	-0.212	3	-0.212	.536	10		
5986					57.496	2	-0.016	2	-0.016	.480	8		
6005					57.541	3	-0.106	3	-0.106	.438	10		
6033					57.337	3	-0.027	3	-0.027	.310	10		
6056					57.473	2	+0.082	2	+0.082	.557	8		
6084					57.568	3	-0.139	3	-0.139	.427	10		
6109					57.304	2	-0.148	2	-0.148	.367	8		
6147					57.610	2	-0.112	2	-0.112	.498	8		
6278					57.779	1	-0.270	1	-0.270	57.509	6		
Mean										57.480		57.428	

These results differ by the sum of the transmission-time in the two directions, which, from this rough determination, would seem to be $0^{\circ}.052$, or about half this amount in each direction. Their half-sum gives, as the best value obtainable from this mode of combination,

$57^{\circ}.454$ from 152 observations.

In this abstract of our results, I have not entered upon the question of velocity of the telegraphic signals. This has been thoroughly discussed, and the results by the two wires compared; but it has no bearing upon the purpose of the present report, inasmuch as the time of transmission has been completely eliminated. The average time of transmission of a signal was three-hundredths of a second.

Finally, the individual determinations, classified according to stars, give as the mean result,

$57^{\circ}.446 \pm 0^{\circ}.012$ from 52 different stars.

The thorough accordance of our final values, no matter what the principle adopted in their combination, renders it very improbable, in my judgment, that the adopted result can be in error by more than the hundredth part of a second.

The longitude of the station point in New-York, as determined by Mr. WALKER, was

$0^{\text{h}} 12^{\text{m}} 15^{\text{s}}.47$ East from Washington (Observatory);
 $0 \ 11 \ 26.07$ West from Cambridge (Observatory dome).

Hence we have for the longitude of the station point in Albany,

$0^{\text{h}} \ 0^{\text{m}} 57^{\text{s}}.45$ East from New-York;
 $0 \ 13 \ 12.92$ East from Washington;
 $0 \ 10 \ 28.62$ West from Cambridge.

The geodetic reduction to the meridian-circle of the Dudley Observatory is $-0^{\circ}.034$; and, to the centre of the dome, the reduction is $-0^{\circ}.051$.

Very respectfully,

Your obedient servant,

B. A. GOULD.

CAMBRIDGE, 1861, April 4.

LONGITUDE OF HAMILTON COLLEGE OBSERVATORY.

LETTER FROM JUDGE WILLIAMS TO PROF. WOOLWORTH.

TREASURER'S OFFICE, HAMILTON COLLEGE, }
CLINTON, Oneida County, N. Y., January 8, 1860. }

DR. S. B. WOOLWORTH, *Secretary, &c.*

DEAR SIR :

I HEREWITH transmit the final Report of Dr. PETERS, on the determination of the longitude of the Observatory.

Hoping that the Report and the results arrived at may meet the approval of the Board of Regents, and prove a valuable addition to the scientific knowledge of our State,

I remain

Your obedient servant,

O. S. WILLIAMS, *Secretary, &c.*

DR. PETERS, TO JUDGE WILLIAMS.

HAMILTON COLLEGE OBSERVATORY, }
CLINTON, 1859, December 15. }

HON. O. S. WILLIAMS,

Secretary Board of Trustees of Hamilton College.

DEAR SIR :

I HAVE NOW the honor to report the final result of the determination of the difference in longitude between the Observatories of Harvard and Hamilton Colleges, by the use of the electric telegraph, as undertaken by means of an appropriation from the State Legislature, and under the auspices of the Regents of the University. My former communication reported upon the operations themselves and their successful close, and exhibited at the same time a preliminary result deduced from the work of the first night. You will see, from the figures below, that the result from the second night, when we succeeded in connecting the two observatories and in obtaining correspondent observations, confirms the first value within the limits of its probable error ; thus warranting the omission of any further operation on a third or more additional nights, as not possibly strengthening sensibly the value which is to be adopted as final.

The transit observations, and the clock signals available numbered on the two successful nights, are as follows :

	Transits of Stars observed at		Clock Signals.
	Cambridge.	Hamilton College.	
August 16	25	36	168
October 3	60	40	1469

You are aware that the clock at the Hamilton College Observatory is regulated for mean time, while the Cambridge clock beats sidereal time. This circumstance was of great advantage, for obtaining on both the chronographs such a number of coincidences of the pendulums as to reduce the probable errors remaining in the clock-comparisons to a vanishing quantity : this error is, indeed, for the first night $0^{\circ}.00078$, and for the second night $0^{\circ}.00027$ only. As the coincidences were registered on *both* the chronographs, half the difference of their readings gives the wave- and armature-time, while half their sum gives the clock-comparison independent from any retardation of the electric current by the wires and the apparatus. The wave- and armature-time was found on both days nearly equal : $= 0^{\circ}.029$.

The instrumental corrections, together with the clock-errors, were computed from all the stars observed on each night, by the method of least squares, taking the right-ascensions for both places from the same catalogue (*Mædler's* reduction of *Bradley*); a list of the stars to be observed, selected chiefly between the zenith and the equator, having been prepared previously. From these data, the longitude-difference has been derived in the following manner :

On August 16, by the observations at Hamilton College, the correction of the clock to mean time was found to be,

at $12^{\text{h}} 0^{\text{m}}$, $+11^{\circ}.158$, with the mean error of $\pm 0^{\circ}.068$;

or it was,

$12^{\text{h}} 0^{\text{m}}$ Ham. Coll. clock $= 21^{\text{h}} 40^{\text{m}} 23^{\circ}.675 \pm 0^{\circ}.068$ Ham. Coll. sid. time.

Observations on the days preceding and following gave the hourly rate of the clock as $+0^{\circ}.010$ against mean time, which is $+9^{\circ}.866$ against sidereal time. On the same day, the observations at the Cambridge Observatory gave the correction of the clock to sidereal time,

for $23^{\text{h}} 0^{\text{m}}$, $-2^{\text{m}} 35^{\circ}.880$, with the mean error of $\pm 0^{\circ}.035$;

or it was,

$23^h 0^m$ Camb. clock = $22^h 57^m 24^s.120 \pm 0^s.035$ Camb. sidereal time,
the clock-rate in 100 minutes being $-0^s.122$ against sidereal time.

The comparison of the clocks of the two observatories, by means of the telegraph, presents, as a mean of the readings from the two chronographs, the equations

$$\begin{aligned} 11^h 8^m 23^s.738 \text{ Ham. Coll. clock} &= 21^h 8^m 21^s.091 \text{ Camb. clock} \\ &\quad \text{(mean of 107 comparisons),} \\ \text{and } 14 \ 5 \ 26.705 \text{ " " " } &= 0 \ 5 \ 53.328 \text{ " " } \\ &\quad \text{(mean of 61 comparisons);} \end{aligned}$$

or, as a general mean,

$12^h 36^m 55^s.222$ Ham. Coll. clock = $22^h 37^m 7^s.210$ Camb. clock;
the probable error of which, as before stated, is to be considered as vanishing. Adding hereto the respective clock-errors, also the corrections on account of the clock-rates, we obtain

$22^h 17^m 24^s.97$ Ham. Coll. sid. time = $22^h 34^m 31^s.36$ Camb. sid. time:
the terms of which equation have now respectively the mean errors of $\pm 0^s.068$ and $\pm 0^s.035$. Taking their difference, therefore, we have

$$17^m 6^s.39, \text{ with the mean error of } \pm 0^s.077,$$

as the difference in longitude resulting from the first night, exclusive of the correction for personal equation.

The result from the observations made October 3, was obtained in a way different from the preceding. Since the chronograph-sheets of Cambridge contain a complete record of the observations at the Hamilton College transit also, the instrumental corrections for both the transits were computed from the data afforded by the readings of those sheets, and thus the error of the Cambridge clock was determined directly in regard to the meridian both of Cambridge and of Hamilton College. The chronograph-sheets of Hamilton College served only for determining the wave- and armature-time. The correction of the Cambridge clock was found to be :

$$\begin{aligned} \text{to Cambridge sid. time} &= -7^s.17, \text{ with the mean error of } \pm 0^s.027; \\ \text{to Ham. Coll. sid. time} &= -17^m 13^s.53, \text{ " " " } \pm 0^s.034 \end{aligned}$$

Subtracting the second from the first, we get

$$+17^m 6^s.36, \text{ with the mean error of } \pm 0^s.043;$$

and subtracting herefrom the wave- and armature-time $0^s.03$, we obtain the difference in longitude, exclusive of the personal equation:

$$+17^m 6^s.33, \text{ with the mean error } \pm 0^s.043.$$

Of the stars observed October 3, there are (besides the Polar star) 33 identical on both places. Clearing the times of their transits, as read from the Cambridge record-sheets, of the level-, azimuth- and collimation-errors of the respective instruments, and taking the mean of the differences of each pair (without distinction in regard to their different weights), it comes :

$$+17^m 6^s.36, \text{ with the mean error of } \pm 0^s.025;$$

from which, deducting the wave- and armature-time $0^s.03$, the difference in longitude is

$$+17^m 6^s.33, \text{ with the mean error } \pm 0^s.025,$$

exactly as before; only the mean error here comes out a little smaller, as the errors in the right-ascensions of the stars are completely eliminated.

Combining now the results from the two nights, viz :

$$\text{August 16, } 17^m 6^s.39, \text{ with the mean error } \pm 0^s.077;$$

$$\text{October 3, } 17^m 6^s.33, \text{ " " " } \pm 0^s.043,$$

into one result, and having regard to the weights due to their mean errors, we get finally the longitude-difference equal to

$$17^m 6^s.34, \text{ with the mean error of } \pm 0^s.037.$$

This, however, has still to receive the small correction due to the peculiarity of the observers in taking transits. To determine this correction, Professor BOND and myself made three sets of comparisons at the Cambridge refractor, on June 6, June 7 and October 26, in all 106 comparisons, which showed that I observe about *one-sixth* of a second earlier than Professor BOND, or

$$B = P + 0^s.161, \text{ with the mean error of } \pm 0^s.011.$$

As I observed at the western station, the correction is additive : therefore we obtain, as the final result,

$$17^m 6^s.50, \text{ with the mean error } \pm 0^s.039,$$

by which quantity the Transit instrument of Hamilton College is West from that of Harvard College.

In order to refer our relative position to the centers of the observatories, we have, from the ground-plans :

The center of the dome of Harvard College Observatory, $26\frac{1}{2}$ feet East from the Transit circle;

The center of the dome of Hamilton College Observatory, $22\frac{1}{2}$ feet West from the Transit instrument.

The sum, 49 feet, corresponds in this latitude to 0.660 seconds of arc, or to 0.044 seconds of time. Therefore, finally,

The center of the dome of Hamilton College Observatory at Clinton is
 $17^m 6^s.46$ West

of the center of the dome of Harvard College Observatory at Cambridge ;
 and this result is subject to a mean error of $\pm 0^s.039$, or to a probable error of $\pm 0^s.026$, which equals 29 feet, or about the width of the Transit room.

The longitude of the Harvard College Observatory from Greenwich, England, as found by the chronometric expeditions, is

$4^h 44^m 30^s.66$, with the probable error of $\pm 0^s.20$.

The longitude of the Hamilton College Observatory is, therefore,

$5^h 1^m 37^s.12$ in time }
 $75^\circ 24' 16''.8$ in arc } West from Greenwich ;

which position must be considered as accurately determined as any point in the United States, since all the longitudes in this country depend upon Cambridge as a zero point; and the square root of the sum of the squares of the probable errors,

$$\sqrt{\{(0.20)^2 + (0.26)^2\}} = \pm 0^s.20;$$

that is, the same as the probable error of the longitude of Harvard Observatory without any increase.

Very respectfully yours,

C. H. F. PETERS.

LETTER FROM PROF. BOND, TO JUDGE WILLIAMS.

OBSERVATORY OF HARVARD COLLEGE, }
 CAMBRIDGE (Mass.), February 18, 1860. }

HON. O. S. WILLIAMS,

Secretary Board of Trustees of Hamilton College.

DEAR SIR :

I ENTIRELY concur with Dr. PETERS in the statement at the close of his Report on the recent determination of the difference of longitude of the Observatories of Harvard and Hamilton Colleges, that the position of the latter must be considered to be known with as much accuracy as that of any other point in the United States.

With much respect,

Your obedient servant,

G. P. BOND,

*Director of the Observatory, and
 Phillips Professor of Astronomy, Harvard University.*

LONGITUDE OF BUFFALO.

LETTER FROM JUDGE WILLIAMS TO PROF. WOOLWORTH.

TREASURER'S OFFICE, HAMILTON COLLEGE : }
CLINTON, Oneida County (N.Y.), July 23, 1861. }DR. S. B. WOOLWORTH, *Secretary, &c.*

DEAR SIR :

In pursuance of a resolution adopted by our Board of Trustees at its annual meeting held on the 17th instant, I transmit to the Regents of the University Dr. PETERS's Report on the longitude of Buffalo. It is a learned and elaborate paper, and I trust will prove satisfactory.

And remain

Your obedient servant,

O. S. WILLIAMS, *Secretary, &c.*

REPORT OF DR. PETERS,

ON THE DETERMINATION OF THE GEOGRAPHICAL POSITION OF THE
CITY OF BUFFALO,

IN AUGUST 1860.

HON. O. S. WILLIAMS,

Secretary of the Board of Trustees of Hamilton College.

DEAR SIR :

THE Regents of the University, in confiding to the Hamilton College Observatory the work of determining the longitude of the city of Buffalo (forming part of the longitude determinations ordered by the State Legislature), were desirous that at the same time also the latitude of that important lakeport, on the terminus of the Erie Canal and of the New-York Central Railroad, might be accurately fixed, and requested that the final result should be referred to the lighthouse in the harbor. Consequently the work to be performed was threefold : 1° the longitude, to be obtained, of course, by the telegraphic method; 2° the latitude; and 3° the transformation of these co-ordinates from the observing station to the lighthouse.

[Senate, No. 95.]

The instrument at our disposition, both for time determinations and for observations in the prime vertical, was the 32-inch portable Transit, which, as will be seen below, has proved very suitable for the purpose. It permits, by its optical power, a sufficient number of stars to be taken in daytime, while its weight and bulk are not too cumbersome in transporting and mounting.

In July I went to Buffalo the first time, in order to select a convenient station, and to put the same, by a temporary wire, into connection with the great telegraph line, the use of which had been conceded by the Superintendent J. D. REID, Esq., with his customary liberality. In the more densely built business portion of the city, however, where the telegraph line passes, no locality was found commanding sufficient range of the sky both in the meridian and in the direction perpendicular to it, suiting at the same time the condition of stability for the instrument, and offering the necessary security against injury and disturbance. It was, therefore, with the greatest pleasure that I accepted the very kind offer of Dr. W. S. VANDUZEE, who put at our free disposition his private observatory at his residence on Main-street, and deserves our best thanks for the effective aid given with so great amiability to our enterprise. The nearest distance, however, of Dr. VANDUZEE's observatory from the telegraph line being about one mile and a half, the expense of a temporary connecting wire of such a length seemed unauthorised; and therefore another mode of transmitting Buffalo time to Hamilton College was hit upon, which, although not equally direct, and giving some more work to the observer, has proved entirely successful, as will be seen from the results.

To explain this mode, I remark that there was only one observer, with one transit and one clock and chronograph, besides a chronometer. The quality of our clock permits a reliance upon the invariability of its rate for several successive days without sensible error. Therefore, after having determined its correction to true time; then making a quick journey to Buffalo, mounting here the transit instrument, and recording by means of the telegraph the transits of a number of stars upon the chronograph at Hamilton College; and finally returning with the Transit and ascertaining without delay the clock-error anew, the readings of the chronograph-sheets would furnish a knowledge of the two local times simultaneously existing, or rather a comparison of the corrections of the clock in regard to each of the two meridians, and hence the difference in longitude.

Such was the plan proposed, which now was modified in so far that not the star-signals themselves were transmitted by the tele-

graph, but the breaks made at certain seconds of the chronometer. This latter was regulated by transits at Dr. VANDUZEE's observatory; then carefully carried to the telegraph office : here a number of seconds were signaled by means of taps upon a break-circuit key, and, after returning to the observatory, another set of transits was observed, for the purpose of eliminating the influence of any change in the chronometer-rate by transportation. The taps can be made to coincide far more accurately with the chronometer-beats than with the transits of a star behind the wires; and moreover as in the former circumstance they may easily be multiplied to an almost unlimited extent, no sensible increase of the probable error in the transmitted time is to be feared as arising from this additional source.

The time of the transits in Buffalo being noted on the chronometer by ear and eye, those at the Hamilton College Observatory were observed exactly in the same manner; and likewise the chronometer was compared with the clock in a corresponding way, viz. chronographically. Thus it is evident that any discrepancy arising from a different mode of determining the time at the two places, or any *personal equation*, was avoided.

After having made a good set of time determinations on the 6th August, I started again for Buffalo on the 7th, this time accompanied by the transit instrument and the sidereal chronometer. The following day, the former was mounted on the fixed pier under the meridian slot of Dr. VANDUZEE's observatory. The observations were begun immediately, and time-signals sent to Hamilton College that same evening : they were repeated on the following evening. On the 10th August I returned with the Transit, and made time determinations on the 11th again at the Hamilton College Observatory. Here, on both the evenings when time-signals were transmitted, Prof. O. Roor had the kindness, at a concerted hour, to prepare and put the chronograph in motion.

The success in arriving at a good and accurate result by the method described, depending essentially on the uniformity of the clock-rate, it was necessary, in order to obtain full evidence of such uniformity, to observe transits in the week following the 11th August, as had been done during the week preceding the 6th. By combining the time determinations made on July 28 and 30, and August 5, 6, 11, 16 and 19, I have obtained only a confirmation of the excellency of the clock.

The armature- and wave-time of the electric current cannot be determined but by means of two chronographs simultaneously recording. Either the correction for it may be entirely neglected on

account of its smallness, or it may be inferred from other observations. It is subtractive in our case, the signals being sent from the western station; and from the operations between the Harvard and Hamilton College observatories, I have assumed three hundredths of a second for its amount.

Between the 21st and 30th August, by forming a small triangulation, the connection of the observing station with the Lighthouse was effected. The lighthouse is not visible from Dr. VANDUZEE's observatory; but, in reconnoitering, it was ascertained that by only two intermediate points, viz. the steeple of Westminster Church and a station on the Reservoir, that is, by no more than two triangles, the Lighthouse might be reached. A base-line of exactly 1700 feet was measured near the observatory; and the azimuth of Westminster steeple from the Observatory was determined by means of the Sun, a small theodolite serving both for this determination and for measuring the triangles. This instrument, however, could not be placed in Westminster steeple; and the third angles at this point, therefore, have been supplied from the triangles.

The latitude was determined on the nights of the 27th and 29th August; a temporary brick-pier, and a small wooden building with an opening in the prime vertical for placing there the Hamilton College Transit, having been erected in Dr. VANDUZEE's garden, 24 feet north and 73 feet east from the center of the dome of the Observatory. In the mean time, to regulate the chronometer, a small portable transit instrument, owned by Dr. VANDUZEE, was replaced in the meridian. Instead of making a previous selection of stars for the prime vertical transits, I preferred to observe all those conveniently entering the field in moderate zenith-distances; taking care to obtain for each position (north and south) of the instrumental axis a nearly equal number of stars in east and in west, and so great a number that the errors of the individual declinations (sometimes found only in LALANDE's Catalogue) might sufficiently compensate each other.

Having finished the observations for latitude and the trigonometrical operations, I intended to improve the occasion by sending, the evening before my departure, a few confirmatory signals for longitude. The weather, however, which had been highly favorable during our previous operations, now had changed; and finally when on the 13th September I had obtained an unobjectionable set of time determinations, it was ascertained that the wires between Utica and Clinton were out of repair: wherefore I closed my journeys by returning home on the 15th September.

After these introductory explanations, I proceed to report the detailed observations and the results computed therefrom.

I. LONGITUDE DETERMINATION.

The following table exhibits the transits for time : first, at the Hamilton College Observatory (omitting, for the sake of brevity, those made before and after, confirming solely the uniformity of the clock-rate); and, secondly, at Buffalo. The chronometer-times are the arithmetical means of the wires (except for the polar stars, usually eleven) reduced to the middle wire, and, moreover, already reduced for rate of chronometer to a certain intermediate epoch of each set.

A. TRANSITS OBSERVED AT HAMILTON COLLEGE OBSERVATORY.

1860, August 6.		C.			
Item.	Star's name.	Chronometer-time.	Corr. for level.	Results.	
W	β Corvi	12 ^h 27 ^m 1 ^s .81	+0 ^s .01	For 13 ^h 18 ^m 27 ^s chron.	
	12 Canum Venat.	40 28.01	+0.04	$c = -0^s.596$	
	α Urise min. s. p.	13 8 2.06	-21.46	$k = -0^s.041$	
E	Idem	8 48.89	-0.74	$\theta = +3^s.077$	
	η Bootis	47 59.70	+0.03		
	α Bootis	14 9 15.20	+0.03		
August 11. h.					
W	α Urise min. s. p.	13 8 53.30	+1.18	For 13 ^h 44 ^m 24 ^s chron.	
E	Idem	8 38.22	+1.57	$c = +0^s.197$	
	α Virginis	17 55.98	-0.04	$k = -0^s.329$	
	η Urise maj.	42 7.47	-0.09	$\theta = -3^s.998$	
	η Bootis	48 7.76	-0.06		
	α Bootis	14 9 23.25	-0.06		

B. TRANSITS OBSERVED AT BUFFALO.

August 8. ϑ .					
W	α Urise min. s. p.	13 22 44.57	+3.04	For 14 ^h 37 ^m 20 ^s chron.	
E	Idem	22 37.25	+3.26	$c = +0^s.122$	
	α Virginis	31 40.13	-0.08	$k = -0^s.817$	
	η Urise maj.	55 51.21	-0.15	$\theta = -13^m 47^s.919$	
	η Bootis	14 1 51.79	-0.09		
	α Bootis	23 7.32	-0.07		
W	ρ Bootis	39 38.20	-0.01		
	ϵ Bootis	52 43.02	-0.02		
	β Urise min.	15 4 54.91	-0.15		
	α Coronæ	42 36.51	-0.16		
	α Serpentis	51 13.94	-0.13		
	ζ Urise min.	16 2 52.52	-0.75		
August 8. ϑ .					
W	λ Urise min.	20 16 56.25	-7.10	For 21 ^h 7 ^m 5 ^s chron.	
E	Idem	16 59.75	-7.10	$c = +0^s.034$	
	α Cygni	50 31.45	-0.28	$k = -1^s.543$	
	32 Vulpeculæ	21 2 28.10	-0.23	$\theta = -13^m 48^s.097$	
	61' Cygni	14 29.76	-0.28		
	ζ Cygni	20 51.06	-0.22		
August 9. $\mathcal{M}$.					
W	α Urise min. s. p.	13 22 45.67	+0.80	For 13 ^h 58 ^m 8 ^s chron.	
E	Idem	22 39.17	+3.32	$c = +0^s.050$	
	α Virginis	31 40.71	-0.08	$k = -0^s.839$	
	η Urise maj.	55 51.44	-0.20	$\theta = -13^m 48^s.309$	
	η Bootis	14 1 52.21	-0.13		
	α Bootis	23 7.76	-0.13		
August 9. $\mathcal{M}$.					
E	λ Urise min.	20 17 12.15	-5.77	For 21 ^h 2 ^m 30 ^s chron.	
W	Idem	16 57.68	-1.05	$c = +0^s.093$	
	α Cygni	50 31.51	-0.13	$k = -1^s.256$	
	32 Vulpeculæ	21 2 28.24	-0.14	$\theta = -13^m 48^s.497$	
	61' Cygni	14 29.77	-0.21		

The first column shows the position of the axis (east or west). The column headed "Correction for level," gives the level-readings (corrected for inequality of pivots), multiplied by the corresponding coefficients. The results are computed by using the star-places given in the *Greenwich Nautical Almanac*; and c denotes the error of collimation, & the error of azimuth, θ the chronometer-error, or its correction to sidereal time of the place.

Gathering herefrom, we have

	Chronometer time	Correction of Chron.	
August 8	13 ^h 18 ^m 27 ^s	+	3 ^s .077
" 11	13 44 24	—	3.998
August 8	14 ^h 37 ^m 20 ^s	—	13 ^m 47 ^s .919
" 8	21 7 5		13 48.097
" 9	13 58 8		13 48.309
" 9	21 2 30		13 48.497

} to Hamilton Coll. sidereal time.

} to Buffalo sidereal time.

The means of the comparisons by chronograph of clock and chronometer gave the following relations :

August 6, 13^h 2^m 50^s.63 chron. = 4^h 0^m 41^s.33 clock;

August 11, 13 12 30.00 chron. = 3 50 38.68 clock.

Adding hereto the chronometer-times respectively +3^s.09 & —3^s.97, and converting the sidereal times thus resulting into mean time (using the *Greenwich Nautical Almanac*), we obtain

August 6, 4^h 0^m 41^s.33 clock = 4^h 0^m 26^s.55 mean time;

August 11, 3 50 38.68 clock = 3 50 17.75 mean time,

and the clock corrections August 6, —14^s.78,

" 11, —20.93;

whence also the daily rate of the clock —1^s.230.

The taps for the time-signals at the telegraph office in Buffalo were made always at five successive seconds of the chronometer; the middle one corresponding usually with a full minute, or with 30^s. These middle times of the chronometer and the corresponding single readings of the chronograph are shown in the following tables, where columns 2, 3 and 5, 6 are understood to exhibit only the fractions (hundredths of a second) belonging to the same second written in column 4.

August 8. 8.

Time of Chronometer.	Corresponding Readings of Chronograph.				Mean.	Mean reduced to 18° 36' 0" Chronometer.	
18 ^h 19 ^m 0 ^s	—	.64	9 ^h 8 ^m 9 ^s .60	.60	.53	9 ^s .59	25 ^m 6 ^s .80
19 30	.60	57	8 39.55	54	53	39.56	6.86
20 0	53	56	9 9.36	51	50	9.53	6.91
20 30	60	65	9 39.55	47	42	39.54	7.00
21 0	29	37	10 9.41	32	28	9.33	6.87
21 30	—	08	10 39.13	18	18	39.14	6.76
22 30	00	01	11 39.00	00	00	39.00	6.79
23 0	97	98	12 8.99	100	102	9.00	6.87
24 30	75	70	13 38.70	68	68	38.70	6.82
25 0	54	84	14 8.82	80	70	8.74	6.94
25 30	—	00	14 38.58	53	50	38.55	6.83
26 0	64	64	15 8.56	—	—	8.61	6.97
30 0	87	90	19 7.90	86	83	7.87	6.89
30 30	75	72	19 37.69	79	70	37.73	6.83
31 0	64	61	20 7.65	62	62	7.63	6.81
31 30	70	68	20 37.65	62	59	37.65	6.91
32 0	52	55	21 7.61	50	52	7.54	6.88
32 30	51	50	21 37.47	47	42	37.47	6.90
33 0	37	52	22 7.50	45	38	7.44	6.95
33 30	37	40	22 37.30	28	20	37.31	6.90
34 0	11	18	23 7.13	19	19	7.16	6.83
34 30	16	05	23 37.09	03	03	37.07	6.82
35 0	03	13	24 7.10	06	00	7.06	6.90
35 30	100	100	24 36.95	95	86	36.95	6.87
36 0	00	00	25 7.01	00	16	6.97	6.97
37 0	—	71	26 6.71	72	70	6.71	6.87
40 0	23	10	29 6.20	17	24	6.19	6.85
40 30	10	09	29 36.11	12	10	36.10	6.84
41 0	00	00	30 6.10	02	00	6.02	6.84
41 30	00	00	30 36.00	11	10	35.96	6.86
42 0	98	92	31 5.89	87	82	5.90	6.88
42 30	87	81	31 35.82	83	80	35.83	6.90
43 0	70	68	32 5.77	72	76	5.73	6.88
43 30	70	65	32 35.74	64	71	35.69	6.92
44 0	53	58	33 5.60	54	34	5.52	6.83
44 30	63	58	33 35.52	50	46	35.52	6.91
45 0	46	48	34 5.39	37	25	5.39	6.86
45 30	35	41	34 35.28	20	23	35.29	6.84
46 0	40	41	35 5.30	20	14	5.29	6.93
46 30	13	00	35 35.00	00	12	35.05	6.77
47 0	00	00	36 5.06	04	00	5.02	6.82
47 30	12	02	36 35.00	07	05	35.00	6.88
48 0	90	89	37 4.85	—	79	4.86	6.81
48 30	87	86	37 34.82	—	73	34.82	6.87
49 0	76	74	38 4.71	68	65	4.71	6.84
49 30	68	64	38 34.60	60	61	34.63	6.84
50 0	61	67	39 4.67	60	57	4.62	6.91
50 30	60	55	39 34.53	52	50	34.54	6.91
51 0	35	39	40 4.45	43	30	4.36	6.82
18 ^h 36 ^m 0 ^s = Mean of 49 signals.							Mean = 9 ^s 25 ^m 6 ^s .8

The mean of these signals furnish, therefore, the equation

$$18^h 36^m \text{ chronometer} = 9^h 25^m 6^s.87 \pm 0^s.0073 \text{ clock:}$$

adding to which respectively the correction of the chronometer to Buffalo federal

time = $-15^m 48^s.03$, and the correction of the clock to Hamilton College mean

time = $-17^s.55$ (derived by interpolation from the data given on page 39), we

get $18^h 22^m 11^s.97$ Buffalo Sid. T. = $9^h 24^m 49^s.32$ Ham. Coll. M. T.

$$= 18^h 36^m 21^s.88 \text{ Ham. Coll. Sid. T. ;}$$

and hence the difference in longitude, from the observations of this evening,

$$13^m 50^s.91.$$

August 9. 27.

Time of Chronometer.	Corresponding Readings of Chronograph.				Mean.	Mean reduced to 18 ^h 22 ^m C ^h Chronometer.	
18 ^h 10 ^m 30 ^s	.94	.88	8 ^h 55 ^m 45 ^s .88	.84	.80	45 ^s .87	7 ^m 13 ^s .99
11 0	74	72	56 15.75	76	75	15.74	13.94
11 30	71	69	56 45.62	70	67	45.68	13.96
12 0	52	—	57 15.50	48	47	15.49	13.85
12 30	48	38	57 45.56	60	63	45.53	13.97
13 0	62	53	58 15.56	62	50	15.57	14.10
13 30	24	27	58 45.27	29	27	45.27	13.88
14 0	30	29	59 15.21	19	18	15.23	13.92
16 30	93	88	9 1 44.93	—	86	44.90	14.00
17 0	73	76	2 14.68	71	76	14.73	13.91
17 30	64	70	2 44.69	69	72	44.69	13.95
18 0	63	64	3 14.56	55	52	14.58	13.93
18 30	51	50	3 44.46	52	53	44.50	13.93
19 0	50	52	4 14.51	50	48	14.50	14.01
20 0	22	24	5 14.30	32	31	14.28	13.95
20 30	25	19	5 44.16	13	17	44.18	13.93
21 0	04	12	6 14.10	03	05	14.07	13.91
22 30	94	84	7 43.75	83	84	43.84	13.92
23 0	84	82	8 18.81	86	88	18.84	14.00
23 30	71	74	8 43.66	64	71	43.69	13.94
24 0	75	67	9 13.69	69	60	13.68	14.01
24 10	61	55	9 23.51	52	50	23.54	13.90
24 20	55	48	9 33.49	50	51	33.51	13.89
24 30	—	48	9 43.52	55	59	43.53	13.92
24 40	—	47	9 53.48	49	—	53.48	13.92
26 0	30	24	11 13.29	30	25	13.28	13.93
26 30	19	18	11 43.18	20	21	43.19	13.93
27 0	18	10	12 13.03	10	13	13.10	13.92
29 0	90	87	14 12.86	84	88	12.87	14.02
29 30	74	73	14 42.73	74	70	42.73	13.96
30 0	—	72	15 12.67	67	64	12.68	13.99
30 10	65	56	15 22.53	62	55	22.58	13.92
30 20	—	—	15 32.57	52	52	32.54	13.91
30 30	67	56	15 42.53	58	58	42.58	13.97
30 40	60	—	15 52.53	51	51	52.54	13.96
30 50	64	60	16 2.54	58	56	2.58	14.03
31 0	53	52	16 12.56	59	55	12.55	14.02
18 ^h 22 ^m C ^h = Mean of 37 signals.							Mean = 9 ^h 24 ^m 13 ^s .95

The mean of these signals furnish the relation

$$18^h 22^m 0^s \text{ chron.} = 9^h 7^m 13^s.95 \pm 0^s.0082 \text{ clock :}$$

to which adding the corrections, viz.

$$- 13^m 48^s.43 \quad \text{and} \quad - 18^s.78$$

(as derived from the data of page 39), we obtain

$$\begin{aligned} 18^h 8^m 11^s.57 \text{ Buffalo Sid. T.} &= 9^h 6^m 55^s.17 \text{ Ham. Coll. M. T.} \\ &= 18^h 22^m 2^s.34 \text{ Ham. Coll. Sid. T.;} \end{aligned}$$

and hence the difference in longitude from the observation of the evening of

$$\text{August 9,} \quad 13^m 50^s.77$$

Above we had found from

$$\text{August 8,} \quad \underline{13 \quad 50.91}$$

$$\text{Mean. . . . } 13^m 50^s.84$$

The meridian in which the time-determinations were made at Buffalo is 11 feet east of the center of the dome of Dr. VANDUZEE's observatory : the transit-slot at the Hamilton College Observatory is $22\frac{1}{2}$ feet west of the center of the dome. These $33\frac{1}{2}$ feet together increase the difference in longitude, if we refer it to the centers of the domes, by $0^s.03$; since $1'$ in longitude corresponds under this latitude to about 1116 feet.

On the other hand, we have to subtract, as above stated, $0^s.03$ for correction on account of wave- and armature-time. The figures above given therefore remain unchanged; and we have, as the final result of our operations,

Dr. VANDUZEE's Private Observatory Dome

$$13^m 50^s.84$$

West of the Hamilton College Observatory Dome.

The longitude of the Hamilton College Observatory (as stated in a former report) resulted from the telegraphic connection with the Observatory of Harvard College, Cambridge, in 1859, with great precision, as follows, viz :

$$5^h 1^m 37^s.12 \text{ West of Greenwich.}$$

Hence the center of the dome of Dr. VANDUZEE's Private Observatory in Buffalo is

$$5^h 15^m 27^s.96 \text{ West of Greenwich;}$$

a result which is probably accurate within one-tenth of a second.

II. LATITUDE DETERMINATION.

For the transits in the prime vertical, only the middle tally of 5 wires has been used, and the following table of observations contains the means of the 5 wires reduced to the middle wire: they are the corrected sidereal times, the chronometer-error being already added. After having ascertained, by a preliminary computation, approximate values for the latitude and for the azimuth of the axis in each set, equations of condition were computed, which therefore have the following form:

$$0 = n + \alpha.c + \beta.\Delta p + \gamma.\Delta z;$$

where c denotes the error of collimation of the middle wire, Δp the correction of the approximate latitude, Δz the correction of the assumed azimuth of the illuminated end of the axis, and where the coefficient α is always equal to unity. Each star observed gives an equation of that form; and all the equations of one evening, where the instrument remained undisturbed, are taken together and solved by the method of least squares.

I subjoin in the table of observations the apparent places of the stars used, which were taken in preference from MÄDLER's Catalogue of BRADLEY's Stars, and, if not found there, from other sources less fiduciary. By reason of the considerable number of stars employed, it is to be expected that a redetermination of the position of some of them by meridian-circle observations (as, for example, those of LALANDE seem to require) will not sensibly alter the resultant value of the latitude, but only tend to diminish its probable error.

August 27. C.

Illus.	Star.	Star's Name.	Sid. time of transit.	*App. right ascension.	App. Declination.
S	E	LL. 46676	21 ^h 6 ^m 0 ^s .4	355° 40' 40".3	+35° 39' 20".9
		LL. 46047	12 35.6	350 58 19.4	37 53 46.9
		LL. 43457.8	21 39.6	332 13 45.6	42 15 59.7
	W	LL. 33424	28 14.8	270 57 53.3	30 26 36.4
		LL. 38154	35 39.8	298 6 4.8	39 59 57.1
		87 Ophiuchi	39 52.9	265 47 53.5	25 40 27.7
		LL. 33853	45 0.5	273 37 55.6	29 36 43.8
		LL. 34131	50 5.3	275 9 22.0	29 45 19.3
		19 Cygni	53 20.3	296 24 52.8	38 22 8.7
		LL. 40057.8	56 15.5	309 14 0.3	41 13 21.3
		37 γ Cygni	22 3 34.0	304 18 55.6	39 48 56.2
	E	2 α Trianguli	12 9.2	26 17 38.6	28 54 1.4
		43 β Andromedæ	17 33.7	15 29 36.6	34 52 58.2
		13 Andromedæ	28 55.6	350 6 47.8	42 8 50.2
	N	37 μ Andromedæ	35 50.3	12 15 52.9	37 44 40.1
		LL. 43457.8	58 47.9	332 13 45.6	42 15 59.7
		113 Hercules	23 4 28.2	282 13 24.5	22 28 26.1
		6 Lacertæ	8 33.4	336 7 42.4	42 24 44.8
		67 σ Cygni	13 34.0	317 59 41.9	38 48 55.0
		54 λ Cygni	17 51.6	310 30 13.5	35 59 0.8
		65 τ Cygni	28 34.7	317 19 0.2	37 27 18.7
		39 Cygni	32 42.4	304 34 55.8	31 44 43.1
		B. Z. 312 Wash. Obs.	38 4.0	310 24 46.5	33 51 59.9
	E	53 ε Cygni	40 42.5	310 9 7.0	33 27 11.3
		17 Persei	54 44.8	40 44 28.5	34 29 6.1
		50 Andromedæ	0 0 51.4	22 9 57.1	40 42 29.3
		41 Tauri	13 43.2	59 31 15.4	27 13 21.1
		59 χ Tauri	17 36.4	63 31 52.9	25 17 54.9
		0 Persei	24 32.1	53 54 8.8	31 50 42.3
		16 Persei	28 33.4	40 27 23.3	37 44 35.4
		v Andromedæ	34 16.7	23 18 55.6	41 55 0.6

The level-readings appertaining to the foregoing observations are,

$$\begin{array}{l}
 \text{before reversing, } \left\{ \begin{array}{l} \text{for } 21^{\text{h}} 0^{\text{m}} \text{ sid. time, } i = -0''.53, \\ \text{" } 22 40 \text{ " } \quad \quad \quad +2''.47, \end{array} \right. +3''.00 \text{ var. in 100 min.} \\
 \text{after reversing, } \left\{ \begin{array}{l} \text{" } 22 45 \text{ " } \quad \quad \quad -2''.37, \\ \text{" } 0 45 \text{ " } \quad \quad \quad -1''.77, \end{array} \right. +0.60 \text{ var. in 120 min.}
 \end{array}$$

where i denotes the inclination of *Illus.* axis towards the horizon, the positive sign for an elevation above the same; and where the inequality of pivots already has been taken into account.

August 29. 8.

Ther.	Star.	Star's Name.	Std. time of transit.	*App. right ascension.	App. Declination.
N	W	59 δ Draconis	19 ^h 51 ^m 51 ^s .5	254° 7' 13".4	+33° 46' 31".0
		21 ϵ Serpentis	20 1 54.3	233 50 14.4	20 7 24.5
		44 π Serpentis	5 55.6	239 4 38.9	23 11 42.9
		91 θ Herculis	11 5.8	267 52 25.3	37 16 28.1
		LL. 35884-6	19 46.0	285 26 51.6	41 12 14.8
		3 α Lyrae	34 8.8	278 3 39.9	38 39 33.7
	E	LL. 46481	41 27.9	354 2 55.0	33 58 55.4
		28 Andromedæ	48 30.4	5 42 13.8	28 59 8.3
		30 ϵ Andromedæ	53 57.5	7 48 30.8	28 33 26.6
		LL. 46396	58 13.4	353 26 24.9	35 56 59.7
		LL. 367	21 2 58.6	3 22 38.7	32 8 25.1
		13 Lacertæ	16 12.7	339 28 46.5	41 5 29.6
		13 α Arietis	46 17.2	29 50 18.4	22 48 14.9
S	W	102 Herculis	22 25 47.5	270 42 17.3	20 47 50.4
		LL. 34931	30 3.0	280 7 17.2	26 31 9.8
		40 Cygni	33 15.6	305 36 37.0	37 59 15.5
		29 δ' Cygni	39 1.6	302 20 12.0	36 23 4.2
		LL. 39885	44 45.9	308 2 46.0	37 50 56.3
		2 Cygni	49 9.5	289 39 55.5	29 21 15.5
		LL. 43457	56 44.6	332 13 45.6	42 15 59.8
		6 β Cygni	23 7 11.1	291 16 58.8	27 40 20.9
	E	39 Andromedæ	23 24.9	13 46 46.2	40 35 49.0
		25 η Tauri	31 13.5	54 48 25.2	23 40 23.2
		58 Andromedæ	38 28.8	30 1 45.4	37 11 50.8
		14 Trianguli	43 48.0	35 54 33.0	35 31 41.3
		53 τ Andromedæ	47 42.9	23 6 0.4	39 52 14.7
		50 Andromedæ	59 8.6	22 9 57.9	40 42 29.8
		LL. 4830	0 7 11.6	37 25 48.1	37 7 21.8

Level-readings for this evening :

before reversing,	{ for 19 ^h 45 ^m std. time, $i = -3''.16$, }			in 100 ^{mls} var. $+2''.00$
	{ " 21 50 "	— 0.65, }		
after reversing,	{ " 22 15 "			" " $+2''.44$
	{ " 0 10 "	— 0.08, }		

The levelings, both of this and of the first evening, show that the lamp has not been without influence upon the horizontality of the axis. The indications of the level, therefore, have been proportionally interpolated for the observed times.

The evening of 27th August furnishes 31 equations; that of the 29th August, 28. Their solution by the method of least squares gives

$$\text{August 27, } \varphi = 42^{\circ} 54' 40''.543 \pm 0''.545$$

$$\text{August 29, } \quad \quad \quad 54 \ 40.004 \pm 0.719.$$

$$\text{Mean.... } 42^{\circ} 54' 40''.346 \pm 0''.434$$

Subtracting herefrom..... $0''.237$,

corresponding to 24 feet, by which the center of the dome is south of the place where the observations were made, we have finally

$$\phi = 42^{\circ} 54' 40''.11$$

for the latitude of the center of the dome of Dr. VANDUZEE's Private Observatory.

III. REDUCTION TO THE LIGHTHOUSE.

The plan of connecting Dr. VANDUZEE's observatory with the lighthouse in the harbor may be best seen from the accompanying sketch of the small chain of triangles measured for this purpose.

The *base-line* was made exactly 1700 feet, on the level tract of a street, not yet built upon, to the east of the observatory. From the measured angles at the north and south ends of the base, the length of the side "Observatory-Westminster" is obtained: hence the side "Westminster-Reservoir"; and "Lighthouse-Westminster"; finally the distance "Observatory-Lighthouse".

The following *prospectus* shows the angles of the different triangles, at the same time with the opposite sides computed. The *reduction to center* at the respective stations has been applied; and the angles included in brackets have not been measured, but are concluded from the triangles. The theodolite employed gave 30 seconds by means of the verniers; so that the angles, which were several times repeated, probably are certain within a minute.

In the third and sixth of the following triangles, the third side was computed from two sides and their included angle.

{ North end - South end - Observatory,	28° 39'.50	920 ^{feet} .7
{ Observatory - North end - South end,	89 1.56	1919.5
{ South end - Observatory - North end,	(62 18.94)	1700.0
{ North end - South end - Westminster,	100° 20'.25	3501'.1
{ Westminster - North end - South end,	51 7.69	2770.7
{ South end - Westminster - North end,	(28 32.06)	1700.0
{ Observatory - South end - Westminster,	71° 40'.75	2831'.6
{ Observatory - North end - Westminster,	37 53.87	2831.6
{ Westminster - Reservoir - Observatory,	15° 38'.71	2831'.6
{ Reservoir - Observatory - Westminster,	32 56.20	5708.9
{ Observatory - Westminster - Reservoir,	(131 25.09)	7873.8
{ Westminster - Lighthouse - Reservoir,	32° 49'.83	5708'.9
{ Lighthouse - Reservoir - Westminster,	82 0.84	10427.8
{ Reservoir - Westminster - Lighthouse,	(65 9.33)	9555.5
{ Observatory - Westminster - Lighthouse,	(165° 25'.58)	13166'.5
{ Westminster - Observatory - Lighthouse,	(13 3.40)	

In the afternoon of August 27, before sunset, the horizontal angle between Westminster steeple and the Sun's limbs was measured six times, alternating with the limbs, and in both positions of the theodolite-axis for eliminating collimation. The theodolite was situate on the roof near the Observatory; and the angles therefore were centered in regard to Westminster steeple, while the azimuth of the Sun was computed for the corrected times noted by the chronometer. The following shows the individual results :

Sun's	☉ Azimut computed.	Centered Angle ☉—Westm.	Azimut Westminster.	MEANS.
I limb	95° 12' 35"	53° 12' 52"	41° 59' 43"	} 42° 0' 10" (circle to left).
II "	96 7 5	54 6 22	60 43	
I "	95 56 11	53 56 7	60 4	
II "	97 1 11	55 2 29	41 58 42	} 41 59 17 (circle to right).
I "	96 49 10	54 48 44	60 26	
II "	97 37 42	55 38 59	58 43	

Hence the azimuth of Westminster steeple = 41° 59' 44" from the center of dome of Observatory.

Subtracting herefrom the angle 13° 3' 24" between the Lighthouse and Westminster steeple (as computed in the last triangle), we obtain

Azimut { Observatory - Lighthouse } = 28° 56' 20";

and combining herewith the distance

{ Observatory - Lighthouse } = 13166^{feet}.5 :

moreover taking from BESSEL's dimensions of the terrestrial spheroid,

in latitude, 1" = 101^f.20923,
in longitude, 1" = 74.43471
or 1° = 1116.521,

the position of the Lighthouse follows :

1' 53".85 South
and 1' 25".59 = 5°.706 West

of the dome of Dr. VANDUZEE's Observatory.

Although not strictly connected with the present report, but of some interest for the city, I take this occasion to add the position of Westminster steeple, which, situated on a high ground, is visible from a great distance; viz.

20".79 South
and 25".45 = 1°.70 West of Dr. VANDUZEE's Observatory.

IV. FINAL POSITION OF THE LIGHTHOUSE.

From pages 42 and 46 we have for Dr. VANDUZEE's Observatory,

Longitude $5^h 15^m 27^s.96$ west of Greenwich,
Latitude $42^\circ 54' 40''.11$.

Combining herewith the differences of the co-ordinates as found on the preceding page, we obtain as the final result :

LIGHTHOUSE IN BUFFALO HARBOR,

LONGITUDE $5^h 15^m 33^s.67$ in time } West of Greenwich.
= $78^\circ 53' 25''.0$ in arc }
LATITUDE $42^\circ 52' 46''.26$.

Having reported this final result, the accuracy and reliability of which will be quite evident from the detailed discussion preceding, I am led to make two remarks before closing. The first touches the relative value of a single longitude-determination by chronometer, as compared with one by the electric telegraph. Since a chronometer was carried to and from Buffalo between the 6th and 11th August, and in both places compared with accurate time, the opportunity is at hand for a chronometric determination of the meridian difference. The elements for this are found on page 39, where the corrections of the chronometer are given both to Hamilton College and to Buffalo sidereal time. Reducing these to August 9, $2^h 0^m$ chronometer time (very near the middle time of the comparisons in each of the places), we obtain

Chronometer correction to Hamilton College time....	— $0^s.49$
“ “ Buffalo time	— $13^m 48^s.10$

Hence the meridian-difference by chronometer $13^m 47^s.61$

This varies from the telegraphic (true) difference, viz. $13^m 50^s.84$

by $3^s.23$; and there can be no doubt that the fault lies in the former, since the latter seems accurate to within one-tenth of a second; or, in other words, according to these errors, our telegraphic determination has the weight of about 1000 determinations by one chronometer, or of one determination by 1000 chronometers.

My second remark consists in a comparison of the present result for the geographical position of Buffalo, with what it was considered before, according to the most authentic sources. In the State Engineer's Office, there was found nothing bearing on this point. The "American Almanac" for 1861, which appears to be compiled with great diligence, cites (on page 37) for

Buffalo Lighthouse, the latitude $42^{\circ} 50'$,
the longitude $78^{\circ} 59'$,

which differ from our results respectively by $2' 46''$ and $5' 25''$, both in *plus*; that is, the city of Buffalo hitherto has been set down about $2\frac{3}{4}$ miles too far south and 4 miles too far west. Especially the latter change, that of the longitude, is not only interesting, but of some administrative importance. For if, together with the meridian of Buffalo (as is probable), the meridian of the whole western portion of the State henceforth ought to be removed eastward by four miles, then it follows that the area of the State of New-York is in reality from 300 to 400 square miles smaller than has been assumed.

C. H. F. PETERS,
Director of Observatory.

LONGITUDE OF SYRACUSE.

LETTER FROM JUDGE WILLIAMS TO PROF. WOOLWORTH.

TREASURER'S OFFICE, HAMILTON COLLEGE, }
CLINTON, Oneida County, N.Y., January 24, 1862. }DR. S. B. WOOLWORTH, *Secretary, &c.*

DEAR SIR :

I TRANSMIT to you Dr. PETERS's Report on the longitude of Syracuse;

And remain your obedient servant,

O. S. WILLIAMS,
Treasurer Hamilton College.

DR. PETERS, TO JUDGE WILLIAMS.

HAMILTON COLLEGE OBSERVATORY : }
CLINTON (N.Y.), 1861, December. }

HON. O. S. WILLIAMS,

Secretary Board of Trustees of Hamilton College.

DEAR SIR :

I SUBMIT herewith the Report on the determination of the geographical longitude of Syracuse ; this city being one of the points selected by the Regents of the University under the act of the State Legislature for longitudes, and whose central position in the State, on the junction of the Oswego and Erie canals, with the rich Onondaga salt-springs in its neighborhood, render it a prominent point in the geography of New-York.

Reconnoitering the city in the month of August for a suitable observing station, I obtained, through the kind mediation of the Mayor, HOB. CHARLES ANDREWS, a site in the yard of the Court-house, where a brick-pier and a simple wooden shed, with a movable board in the meridian, were erected for the Transit-instrument. The beginning of the observations, however, was delayed until September ; the telegraphic determination of the Ann-Arbor Observatory (Michigan), which was to serve as a basis for the longitudes of the Lake Survey, and for which the co-operation of our Observatory had been solicited, requiring for the final result the



I. OBSERVATIONS AT THE HAMILTON COLLEGE OBSERVATORY.

1861, October 1. δ .

Position of axis.	Star's Name.	No. of wires	Observed time referred to $\phi^h 49^m$ chron.	Star's app. AR.	Level.
W	ω Pictium	7	$23^h 50^m 44^s.41$	$23^h 52^m 15^s.07$	$-0^s.19$
"	α Andromedæ	7	$0 \ 5 \ 46.94$	$0 \ 1 \ 17.15$	0.24
"	γ Pegasi	7	$10 \ 38.91$	$6 \ 9.42$	0.18
"	ι Ceti	7	$27 \ 30.36$	$23 \ 1.31$	0.13
"	β Ceti	9	$41 \ 10.22$	$36 \ 41.20$	0.11
"	α Urse min.	2	$1 \ 14 \ 31.17$	$1 \ 9 \ 27.10$	5.89
E	α Urse min.	2	$13 \ 43.57$	$9 \ 27.10$	8.33
"	β Arietis	5	$51 \ 31.30$	$47 \ 2.82$	0.30
"	α Arietis	8	$2 \ 3 \ 53.83$	$59 \ 25.62$	0.31
"	δ Ceti	5	$14 \ 35.94$	$2 \ 10 \ 7.48$	0.19
"	ξ Ceti	7	$25 \ 19.59$	$20 \ 50.89$	0.25
"	γ Ceti	6	$40 \ 38.71$	$36 \ 10.47$	0.23
"	α Ceti	6	$59 \ 33.64$	$55 \ 5.33$	-0.25

1861, October 8. δ .

Position of axis.	Star's Name.	No. of wires	Observed time referred to $23^h 48^m$ chron.	Star's app. AR.	Level.
E	α Pictis auct.	6	$22^h 54^m 51^s.28$	$22^h 50^m 2^s.61$	$+0^s.03$
"	α Pegasi	7	$23 \ 2 \ 46.69$	$57 \ 54.64$	0.05
"	γ Pictium	5	$14 \ 53.47$	$23 \ 10 \ 2.07$	0.05
"	κ Pictium	6	$24 \ 44.14$	$19 \ 52.92$	0.06
"	ϵ Pictium	7	$37 \ 44.13$	$32 \ 52.64$	0.04
"	α Andromedæ	9	$0 \ 6 \ 10.12$	$0 \ 1 \ 17.16$	0.09
"	γ Pegasi	9	$11 \ 1.67$	$6 \ 9.44$	0.07
"	ι Ceti	7	$27 \ 52.31$	$23 \ 1.36$	$+0.05$
"	β Ceti	9	$41 \ 31.10$	$36 \ 41.22$	-0.01
"	ϵ Pictium	9	$1 \ 0 \ 40.21$	$55 \ 48.60$	0.02
"	α Urse min.	4	$15 \ 32.38$	$1 \ 9 \ 28.66$	0.62
W	α Urse min.	3	$18 \ 8.90$	$9 \ 28.66$	0.79
"	η Pictium	6	$29 \ 3.96$	$24 \ 7.71$	0.03
"	ν Pictium	9	$39 \ 11.81$	$34 \ 16.66$	0.02
"	β Arietis	9	$51 \ 59.25$	$47 \ 2.91$	0.03
"	α Arietis	8	$2 \ 4 \ 22.06$	$59 \ 25.61$	-0.03

II. TRANSITS OBSERVED AT SYRACUSE.

1861, October 2. 8.

Position of axis.	Star's Name.	No. of wires	Observed time reduced to 22 ^h 0 ^m chron.	Star's app. AR.	Level.
E	δ Equulei	8	21 ^h 15 ^m 13 ^s .76	21 ^h 7 ^m 46 ^s .60	+0 ^s .14
"	α Cephei	8	22 54.64	15 18.62	0.30
"	β Aquarii	8	31 44.41	24 18.56	0.09
"	Groombr. 3548	3	35 36.85	26 41.52	1.57
"	ϵ Pegasi	8	44 52.76	37 25.59	0.11
"	Groombr. 3572	7	49 7.42	41 25.23	0.28
"	16 Pegasi	8	54 17.26	46 48.26	0.09
"	Groombr. 3667	5	22 4 23.37	56 25.29	0.33
W	Groombr. 3756	4	24 30.86	22 16 43.00	0.51
"	Radcl. 5705	5	30 41.00	22 23.77	1.13
"	Groombr. 3820	2	32 32.67	23 56.39	1.54
"	ζ Pegasi	8	42 3.82	34 36.03	0.15
"	12 Ceti	6	0 30 27.71	0 23 1.33	+0.09

1861, October 3. 2.

Position of axis.	Star's Name.	No. of wires	Observed time reduced to 21 ^h 19 ^m chron.	Star's app. AR.	Level.
W	γ Aquilæ	8	19 ^h 47 ^m 14 ^s .63	19 ^h 39 ^m 42 ^s .39	—0 ^s .06
"	α Aquilæ	8	51 35.46	44 3.49	0.06
"	λ Ursæ min.	2	20 14 38.48	20 2 14.90	2.70
E	λ Ursæ min.	2	13 45.45	2 14.90	0.43
"	ρ Capricorni	8	28 29.53	20 59.84	0.01
"	α Cygni	7	44 20.06	36 44.54	0.06
"	32 Vulpeculæ	6	56 15.21	48 41.63	0.05
"	61' Cygni	6	21 8 18.38	21 0 43.50	0.09
"	δ Equulei	7	15 18.50	7 46.60	0.08
"	β Aquarii	7	31 49.29	24 18.54	0.08
"	ϵ Pegasi	6	44 57.51	37 25.57	—0.12
W	16 Pegasi	7	54 22.49	46 48.24	+0.08
"	α Aquarii	7	22 6 14.93	58 42.82	0.06
"	Groombr. 3820	5	32 37.77	22 23 56.93	0.83
"	ζ Pegasi	7	42 8.68	34 36.02	+0.03

Forming the conditional equations, and eliminating the instrumental errors of collimation and azimuth, the following corrections of the chronometer to sidereal time of the place are resulting :

Correction to Ham. Coll. Std. T.

October 1, 0^h 49^m chron. — 4^m 28^s.75
 " 8, 23 48 " — 4 56.56

Correction to Syracuse Std. T.

October 2, 22^h 0^m chron. — 7^m 31^s.85
 " 3, 21 19 " — 7 36.10

The chronometer, whose error was thus determined directly from star-observations, nearly at the same epochs was also compared chronographically with the Transit-clock at the Observatory; here, by a short line, and at Syracuse by means of the wires from the telegraph station. At five consecutive seconds, the middle one coinciding with a round second of the chronometer, taps were made on a break-circuit key, and the mean of the five corresponding chronograph-readings was taken as one comparison. Thus the following table, giving in *extenso* the signals made at Syracuse, divided into two sets, is easily understood. In order to render more conspicuous the accuracy with which time can be transmitted in this way, the comparisons have been reduced to one intermediate epoch (in the first set, to $23^h 9^m 0^s$ chron.; in the second, to $23^h 29^m 0^s$ chron.), by adding the column headed "Reduction", which serves to convert the sidereal time-intervals into equivalents of mean time. The figures in the last column of each set, therefore, should be all equal.

COMPARISON of the Chronometer with the Clock, by means of signals given at the Telegraph station in Syracuse, and recorded on the chronograph at the Observatory of Hamilton College, 1861, October 3.

Chronometer.	Readings of Chronograph.					Mean.	Reduction.	For 23 ^h 9 ^m 0 ^s chronometer.
23 ^h 5 ^m 0 ^s	10 ^h 9 ^m 26 ^s .31	.32	.32	.30	.23	26 ^s .30	—0.66	10 ^h 13 ^m 25 ^s .64
20	46.18	10	08	14	11	46.12	0.60	.52
30	56.15	11	07	21	10	56.13	0.57	.56
40	10 6.16	05	05	10	08	6.09	0.55	.54
7 30	11 55.94	80	72	76	78	55.80	0.25	.55
40	12 5.82	80	74	81	80	5.79	0.22	.57
8 0	25.90	89	82	80	74	25.83	0.16	.67
20	45.80	69	72	70	70	45.72	0.11	.61
30	55.78	70	70	70	68	55.71	0.08	.63
40	13 5.71	66	71	68	69	5.69	—0.05	.64
9 0	25.64	64	65	64	67	25.65	—	.65
20	45.60	56	50	58	49	45.55	+0.05	.60
30	55.61	57	59	57	55	55.58	0.08	.66
40	14 5.51	52	46	46	47	5.48	0.11	.59
10 0	25.58	51	56	46	37	25.50	0.16	.66
20	45.38	28	29	22	33	45.30	0.22	.52
30	55.39	41	31	28	32	55.34	0.25	.59
40	15 5.41	48	40	34	38	5.40	0.27	.67
11 0	25.29	33	31	33	44	25.34	+0.33	10 13 25.67

The mean of this set of comparisons gives

$$23^h 9^m 0^s \text{ Sid. chron.} = 10^h 13^m 25^s.607 \text{ Mean time clock.}$$

Chronometer.	Readings of Chronograph.						Mean.	Reduction.	For 23 ^h 29 ^m 0 ^s chronometer.
23 ^h 25 ^m 20 ^s	10 ^h 29 ^m 42 ^s .90	.92	.90	.80	.76		42 ^s .86	—0 ^s .60	10 ^h 33 ^m 22 ^s .26
30	52.84	78	70	82	78		52.88	0.57	.31
40	30 2.88	80	82	79	75		2.81	0.55	26
26 0	22.88	80	72	70	78		22.78	0.49	29
20	42.86	67	60	56	53		42.64	0.44	20
30	52.68	59	57	58	54		52.59	0.41	18
40	31 2.62	50	59	55	58		2.57	0.38	19
27 0	22.67	60	57	62	62		22.62	0.33	29
20	42.71	58	48	43	42		42.52	0.27	25
30	52.56	50	47	46	47		52.49	0.25	24
40	32 2.43	40	44	46	44		2.43	0.22	21
28 0	22.45	43	55	52	50		22.49	0.16	33
20	42.48	48	45	50	51		42.48	0.11	37
30	52.36	40	35	30	28		52.34	0.08	26
40	33 2.24	28	30	36	25		2.29	—0.05	24
29 0	22.41	34	32	30	24		22.32	—	32
20	42.22	17	14	17	12		42.16	+0.05	21
31 20	35 41.88	84	88	96	93		41.90	0.38	28
30	51.84	86	79	83	85		51.83	0.41	24
40	36 1.86	88	87	94	96		1.90	0.44	34
32 0	21.79	82	80	70	70		21.76	0.49	25
20	41.89	76	66	66	68		41.73	0.55	28
30	51.68	60	64	69	76		51.67	0.57	24
40	37 1.62	60	63	63	65		1.63	0.60	23
33 0	21.68	66	65	63	62		21.65	+0.66	10 33 22.31

Mean of this set :

$$23^h 29^m 0^s \text{ Sid. chron.} = 10^h 33^m 22^s.263 \text{ Mean time clock.}$$

Since the chronometer in 10 minutes advanced 0^s.030 against sidereal, or 1^s.668 against mean time, the comparisons become,

$$\text{of the first set, } 23^h 19^m 0^s \text{ Sid. chron.} = 10^h 23^m 23^s.939 \text{ M. T. clock;}$$

$$\text{of the second set, } = 23.931 \text{ " " ;}$$

or the general mean of 44 comparisons,

$$23^h 19^m 0^s \text{ Sid. chron.} = 10^h 23^m 23^s.94 \text{ M. T. clock,}$$

the probable (mean) error of which is only $\pm 0^s.0076$.

As already mentioned, the clocks were compared for the observations at the Observatory in a similar manner, viz. by chronograph, not by coincidences of beats; and the results of these comparisons are,

$$\text{Oct. 1, } 0^h 49^m 0^s \text{ chron.} = 12^h 1^m 8^s.60 \pm 0^s.0008 \text{ clock (17 comp.);}$$

$$\text{Oct. 8, } 23 48 0 \text{ " } = 10 32 20.22 \pm 0.0067 \text{ " (19 comp.).}$$

Combining herewith the corrections of the chronometer to Hamilton College sidereal time given above, and then converting the sidereal into mean time, the corrections of the clock to Hamilton College mean time are obtained as follows :

October 1, 12^h 47^m 27.76 chron. = 12.797

October 2, 10 12 28.82 " = 12.797

The daily clock-rate herefrom resulting, viz. —0.103, being in accordance with preceding and following observations at the Observatory, may be used with confidence for finding the clock-correction corresponding to the time of the telegraphic comparison on October 3, which thus becomes

October 3, 10^h 23^m 23.94 chron. = 12.797

On the other hand, taking the rate of the chronometer for the two hours from 21^h 19^m to 23^h 19^m chron. from the transit in Syracuse on October 2 and October 3, the correction of the chronometer to Syracuse sidereal time is found to be,

for October 3, 23^h 19^m of chron. = 23.9746

Applying these corrections, the equation

23^h 19^m 23.97 chron. = 10^h 23^m 23.94 clock

is changed into

23^h 11^m 23.54 Syracuse Sid. T. = 10^h 23^m 12.96 Ham. Coll. M. T.;

and as

10^h 23^m 9.96 Ham. Coll. M. T. = 23^h 14^m 25.44 Ham. Coll. Sid. T.,

the difference in longitude results,

= 2^m 59.90.

The center of the Court-house was adopted as the permanent point, to which the observations in Syracuse should be referred. The accompanying sketch shows the relative position of the transit instrument and the center of the building; and from it, it will be seen that the former was situated

77.65 feet North

and 38.25 feet East

from the latter. As, moreover, the meridian of the Transit at the Hamilton College Observatory is 22.5 feet west of the center of the dome, the result requires a reduction of

+60.75 feet = +0°.054,

and we have thus finally

The center of the Court-house at Syracuse

2^m 59.95 West

of the center of the dome of the Hamilton College Observatory; or

5^h 4^m 37.07 in time } West of Greenwich.
= 76° 9' 16".0 in arc }

The latitude of Syracuse was approximately determined by the setting circles of the transit-instrument, which, by means of two diagonal verniers, read to one minute, and have spirit-levels. Denoting by h the altitude of a star as read from the circle when crossing the meridian, ρ the refraction, c the index-error, δ the star's declination, φ the latitude, we have,

$$\text{for a southern star, } \varphi = +90^\circ - h + \rho + \delta \mp c;$$

$$\text{for a northern star, } \varphi = -90^\circ + h - \rho + \delta \mp c;$$

the upper sign of c for axis west, the lower sign for axis east. Since there are two circles, both of which were read off, the following column h contains the mean of the two; whence also the index-error refers to the mean.

1861, OCTOBER 3, SYRACUSE : ALTITUDE OF STARS IN THE MERIDIAN.

Axis.	Star's Name.	h .	ρ .	From Zenit.	δ .	$\varphi \pm c$.
E	α Cygni	88° 15'.0	0'.0	N	+44° 47'.6	43° 2'.6
"	32 Vulpeculæ	74 31.0	0.3	S	+27 32.3	1.6
"	61' Cygni	85 2.5	0.1	S	+38 4.6	2.2
"	β Aquarii	40 48.5	1.1	S	- 6 10.5	2.1
"	ϵ Pegasi	56 14.0	0.6	S	+ 9 14.8	1.4
W	16 Pegasi	72 13.0	0.3	S	+25 16.8	4.1
"	α Aquarii	45 58.5	0.9	S	- 0 59.2	3.2
"	Groombr. 3820	47 41.0	0.9	N	+85 24.9	5.0
"	ζ Pegasi	57 3.5	0.6	S	+10 6.9	4.0

Hence, by taking the means,

$$\text{for axis east, } \varphi + c = 43^\circ 2'.0;$$

$$\text{for axis west, } \varphi - c = 43^\circ 4'.1;$$

$$\text{and finally the LATITUDE, } \varphi = 43^\circ 3'.0.$$

Thus it appears that Syracuse is almost exactly three minutes in time due west of Hamilton College.

I have yet to mention that the Telegraph Company, Superintendent J. D. REID, granted us, with their usual liberality, the use of the line after ten o'clock in the evening. Our special thanks are likewise due, for their effective assistance, to Messrs. STONE and MAYO, of the Telegraph offices respectively of Syracuse and Utica. The chronograph was attended to by Mr. I. H. HALL, who is applying himself to the study of astronomy at the Hamilton College Observatory.

Very respectfully,

C. H. F. PETERS,

Director Observatory.

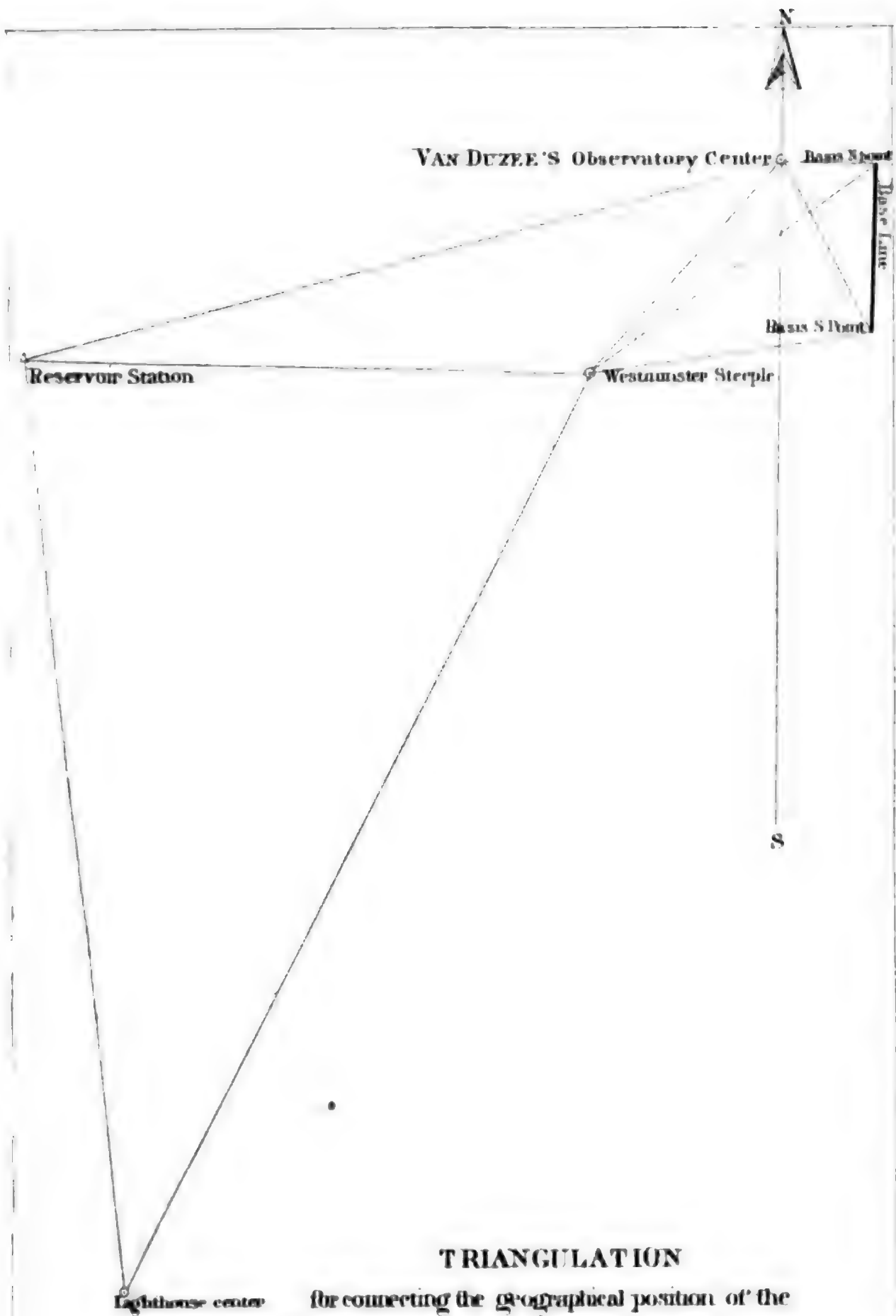
TABULAR STATEMENT OF LATITUDE AND LONGITUDE.

LATITUDE AND LONGITUDE OF THE POINTS DETERMINED AND REFERRED TO IN THE REPORT.

[The Longitudes are reckoned from Greenwich.]

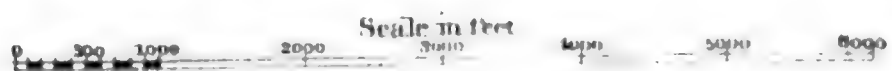
	Latitude.	Longitude in time	Longitude in arc.
Cambridge	42° 22' 48".	4 ^h 44 ^m 29 ^s .56	71° 07' 23".4
New-York .....	.....	4 55 55.63	73 58 54.43
(Rutherford Observatory, Corner 3d avenue and 11th-street.)			
Dudley Observatory....	42° 39' 49".55	*4 54 58.231	73 44 33.45
Hamilton College	43° 3' 16".5	5 1 37.12	75 24 16.8
Syracuse	43° 3' 00".	5 4 37.07	76 9 16.0
Buffalo	42° 52' 46".36	5 15 33.67	78 53 25.0

* The longitude of the Coast Survey station is here reduced to the centre of the Observatory dome.

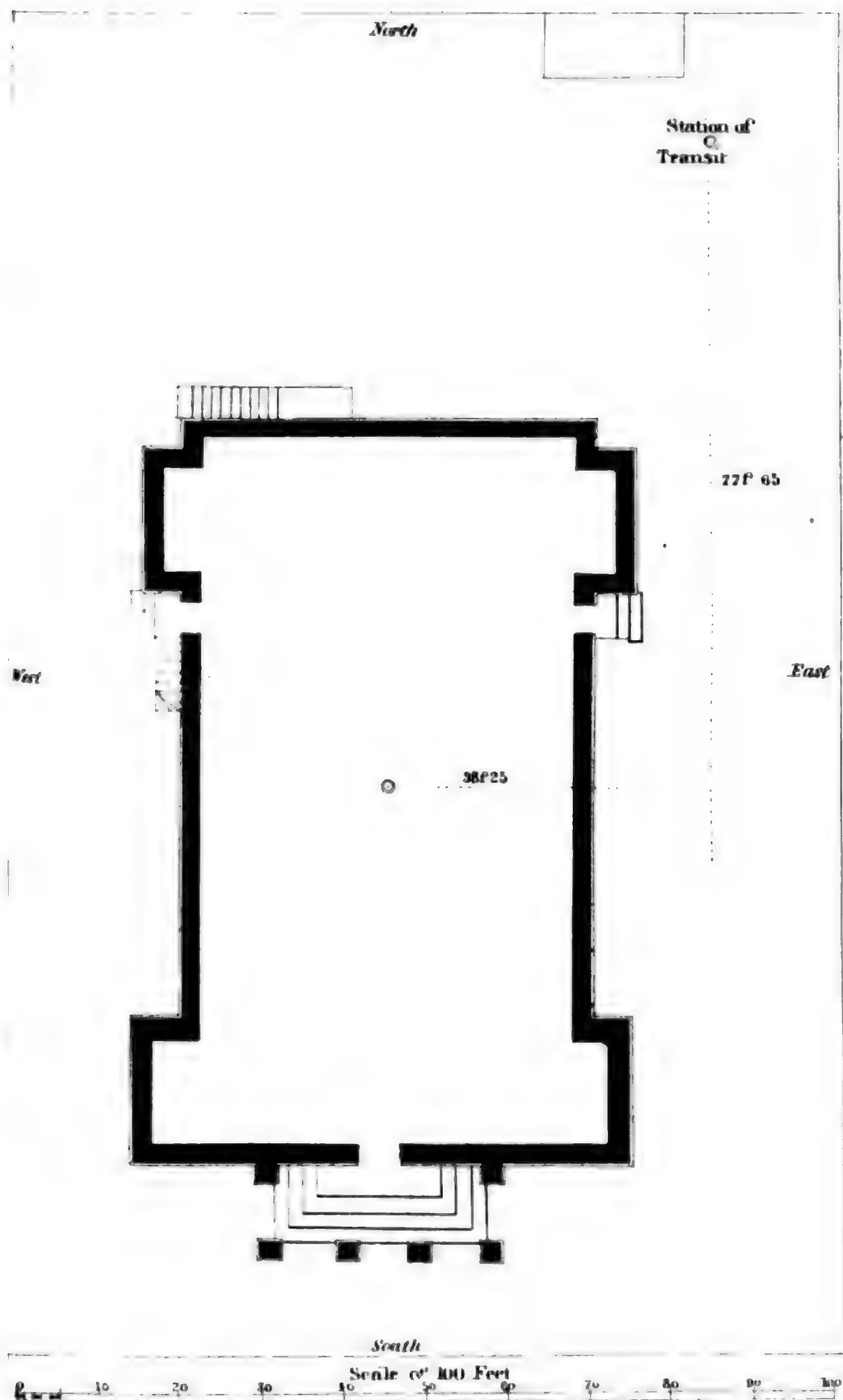


TRIANGULATION

for connecting the geographical position of the
LIGHTHOUSE BUFFALO, with DR VAN DUZEE'S
Astronomical Observatory



UNIV. OF
 CALIFORNIA



TO THE
LIBRARY OF THE
CONGRESS

State of New York.

No. 96.

IN SENATE,

April 10, 1862.

GENERAL ORDERS.

411. (Assembly, No. 246.) An act to amend an act entitled "An act for the better support of the poor in the town of Newburgh, in the county of Orange," passed March 23, 1853.
412. An act to amend the provisions of chapters 28 and 38, Session Laws of 1857, in relation to additions of cash capital to existing funds of mutual marine insurance companies.
413. (Assembly, No. 93.) An act to provide for the drainage of the low lands in the northeast part of the town of Cambria, in the county of Niagara.
414. (Assembly, No. 204.) An act for the relief of Eliza Harrison, an alien.
415. (Assembly, No. 225.) An act granting and releasing all the right, title and interest of the people of the State of New York in and to a messuage lot of land in the 19th ward of the city of New York to Augusta Theresa Arnold and Mary Ulrich.
416. (Assembly, No. 267.) An act to legalize the acts and proceedings of Samuel P. Marsh, as justice of the peace of the town of Verona, Oneida county.
417. (Assembly, No. 260.) An act for the relief of Henry W. Best, a justice of the peace of the town of Cherry Valley, county of Otsego.
418. (Assembly, No. 199.) An act to release the interest of the State, in certain lands of which John Trumbull died seized, to Margaret Trumbull.

[Senate, No. 96.]

- 419. (Assembly, No. 132.) An act to repeal section 15, of title 1, chapter 9, part 1, of the Revised Statutes, relating to expenditures for apprehension of criminals.
- 420. (Assembly, No. 205.) An act to punish frauds upon laborers and others seeking employment.

State of New York.

No. 97.

IN SENATE,

April 5, 1862.

REPORT

OF THE SECRETARY OF THE IROQUOIS AGRICULTURAL
SOCIETY.

To the Hon. the Legislature of the State of New York:

The undersigned, the Secretary of the Iroquois Agricultural Society, would most respectfully submit the following report of the transactions of said society during its existence:

This society was organized and established among the Indians commonly known as the Six Nations of New York. By the provision in the constitution of the society, every Indian of Iroquois lineage, and their wives and children are entitled to all the rights and benefits of the society. It may hold its annual fair and exhibition at any Indian Reservation in the State, the arrangement being analogous to the principle that governs the New York State Agricultural Society. It is intended that all of the Iroquois Nations shall be brought within its scope.

The establishment of an agricultural society among the New York Indians had been for a long time discussed in private circles of such of our people who had really the best interest of the Indians at heart. Occasionally the subject was hinted at, in the presence of the older and experienced men. The subject found no favor among the majority of the principal men, who, for the last quarter of a century, had wielded political sway, and had earned for themselves either distinction for their eloquence, wisdom and patriotism, or disgrace and infamy for their treachery. The former class were contented with the honors they had ac-

quired in the defence of the rights of their people, and believed that they had performed all that duty required, and were not ambitious to open new fields for usefulness; while the latter class were content with the stigma that still lingers over the memories of the past, and fearful that, should they embark in this new enterprise, their motives might be questioned.

To the generation which preceded us, it seemed that "the old way was the best," and that there was no necessity for efforts in the direction of promoting agriculture among our people.

The principal argument against the organization of such a society was, that it was too vast an undertaking, and that our resources were not adequate to the emergency; that it was an innovation which would be unpopular, a sudden transition which will insure its failure. Finding that the older men would not be persuaded to aid the good work, by their influence and means, and by words of encouragement, the indomitable spirit of a later generation, which well knew our present wants, determined to push forward, without the aid and influence of *old fogysm*.

Accordingly, an agricultural meeting was announced to be held on the Cattaraugus Indian Reservation on the 12th day of December, 1859. The meeting was held, in pursuance of the call, and duly organized. The resolutions recommending the organization of an agricultural society and the appointment of a committee to draft and report a constitution were adopted.

The committee was composed of Dr. Peter Wilson, Nicholson H. Parker and John Hudson. The meeting adjourned, subject to the call of the aforesaid committee. The committee, earnest in their efforts to establish an agricultural society among their people, entered with great assiduity upon the discharge of their new duties imposed on them, and were not long in preparing and framing a constitution adapted to the wants of the people.

Accordingly the committee convened the second agricultural meeting on the 15th day of December, 1859, at which meeting the committee reported the result of their joint labors, and the constitution, as reported by them, was adopted without amendments.

The committee hereinbefore mentioned, in examining the statutes of this State in relation to agricultural societies, discovered that, under the laws, the Iroquois Agricultural Society can have no legal existence. The statute authorizes and empowers only "citizens of this State and of the United States" to form and

organize agricultural societies. And the Indians, the aboriginal Americans, are not, by the Constitution or laws, recognized as citizens of this State or of the United States, therefore we cannot be legally an organized society, under a strict construction of law. Knowing this legal disability, we applied to the Legislature of 1860 for an act of incorporation, by which the society could acquire a legal existence and its rights duly protected by law.

The representative from the 4th Assembly district of Erie county, Col. Jas. H. Plumb, had the case in charge, and in due time a bill was reported in the Assembly, but failed to pass. Our friend, however, succeeded in obtaining an appropriation of two hundred and fifty dollars for the benefit of the society.

The first annual fair and exhibition of this society was held on the Cattaraugus Reservation, in the county of Erie, on the 23d and 24th days of October, 1860.

There were 284 entries, of all classes, for exhibition and competition. The exhibition of cereals cannot be surpassed, if equalled. The exhibition of Indian corn (*Zea*, maize) was greater in variety than at any other exhibition we ever attended.

The exhibition of vegetables, of stock, manufactures, agricultural implements, needle-work, fruit, preserved fruit, fine arts and poultry, as also of trials of draft teams and plowing matches, would compare favorably with exhibitions of a similar nature among our white neighbors.

The amount of premiums paid by the society at its first annual fair was \$243.55, being \$6.45 less than the amount of the State appropriation. The society received, for members' tickets and admission fees, \$77.30. Also the sum of \$16.90 for annual and life memberships, making the income of the society, for 1860, the sum of \$343.30. Deducting the sums paid for premiums, \$243.55, and expenses for police and other incidentals, \$25.06, leaves a balance in the hands of the treasurer of \$74.69.

The society held its second annual fair on the aforesaid Reservation on the 23d, 24th and 25th days of September, 1861.

There were 392 entries of all classes, making an excess of entries, over that of the last exhibition, of 108, thereby exhibiting increasing interest in agricultural matters among our people. I need not add that this exhibition was a success.

The income of the society for 1861 is as follows :

Amount received for members' tickets, admission fees and licenses to pedlars and hucksters	\$120 00
Balance on hand of last year.....	74 69
State appropriation	250 00
Total.....	<u>\$444 69</u>
Cr. by amount paid for premiums.....	\$276 42
Police and incidental expenses	93 80
Balance on hand	74 47
	<u>\$444 69</u>

The excess of premiums paid in 1861, over that of last year, \$32.87. The State appropriation for 1861, \$250.00. Amount of premiums paid by the society for the same year, \$276.42, making excess paid for premiums, over that of the State appropriation, \$26.42.

The society has received from the State :

For the year 1860.....	\$250 00
do 1861.....	250 00
Total.....	<u>\$500 00</u>

Amount paid by the society for premiums :

For the year 1860.....	\$243 55
do 1861.....	276 42
Total.....	<u>\$519 97</u>

Excess of premiums paid by the society, over the sum of State appropriations, \$19.97.

It may be superfluous for me to say that the society has succeeded beyond the expectations of its most sanguine friends and promoters. A new avenue for emulation and competition has been opened to the red man, and a new era has dawned upon his history. To direct his attention to the mother earth, in cultivating the soil and developing its rich treasures, which so well repay the labors of the industrious and frugal husbandman, has been for a long time a *desideratum* with those that have an earnest wish for the civilization and reclamation of the Indian.

The State Legislatures have overlooked this most important fact, that agriculture is civilizing in its tendencies; at least it so appears to me, judging from the past history of its dealings with our race. When a bounty is offered to the red man, for the products of his industry, he assiduously sets himself at work to gain the prize and its honors; and these are the results, he is paid for his success, and his love for agriculture is also promoted, and the benefit also extends to his less successful competitors, who, though unsuccessful, are incited to more vigorous efforts.

I cannot close this report without referring to a subject which has the minds of those that desire the general improvement of their race: The incorporation of an institution with university powers among our people, for the promotion of science, arts and agriculture, the three graces that adorn civilized life. By a judicious management of an institution of this kind, upon one of the Reservations owned by the Iroquois Indians in this State, would redound to their benefit. There are now thousands of acres of land, of waste land, unoccupied by any individual, which can be brought to use for this great object. An institution, wherein the science of agriculture could be taught, can be successful among these Indians, though the experiment may fail among the people of the State of New York. But I do not intend to discuss this question at this time, and merely revert to it for the grave consideration of those who have the ability to aid, energy to promote the cause, and talents to secure the end.

Herewith the treasurer's account is presented.

All of which is most respectfully submitted.

PETER WILSON,

Sec'y of the Iroquois Agricultural Society.

VERSAILLES, N. Y., March 31, 1862.

HENRY SILVERHEELS, *Treasurer, in account with the Iroquois Agricultural Society.*

1860.

Oct. 25.	To am't received for members' tickets,	\$40 00	
	do do admission fees...	37 30	
26.	To am't received for annual members,	6 00	
	do do one life member.	10 00	
	To amount of State appropriation...	250 00	
			<u>\$343 30</u>

Nov. 17.	By amount paid for nails.....	\$2 13
	do do for printing and stationery..	11 68
	do do for police	11 25
	do do for premiums.....	243 55
	By amount on hand, carried forward	74 69
		\$343 30

1860.

Oct. 25. To amount brought forward \$74 69

1861.

Sep. 26.	To amount rec'd for members' tickets, admission fees and license to ped- lars	120 00
	To amount received from State.....	250 00
		\$444 69

Sep. 26.	By amount paid for books and stationery	\$5 00
	do paid for lease of grounds for hold- ing the fair	10 75
	By amount paid printer's bill	24 50
	do police three days and two nights..	34 00
	do for preparing ground and buildings	18 05
	do for premiums.....	276 42

1862.

Mar. 31.	By amount of express charges for transporta- tion of books presented to the society by the Secretary of State	1 50
	To amount on hand	74 47
		\$444 69

State of New York.

No. 98.

IN SENATE,

April 11, 1862.

GENERAL ORDERS.

421. An act to adapt the canals of this State to the defence of the Northern and Northwestern lakes.
422. (Assembly, No. 379.) An act to provide for the adjustment and payment of certain arrearages due the State from prison contracts.
423. (Assembly, No. 321.) An act to extend the time for the completion of the Erie and New York city railroad.
424. (Assembly, No. 280.) An act in relation the furnishing supplies and materials to institutions supported by the State.
425. (Assembly, No. 472.) An act to provide for the completion of the Chenango canal from its present termination at or near the village of Binghamton, to the North Branch canal, at the State line.
426. (Assembly, No. 442.) An act entitled "An act to provide for the enrolment of the militia, the organization and discipline of the national guard of the State of New York, and for the public defence."
427. (Assembly, No. 209.) An act to amend the act entitled "An act to provide for the payment of interest on certain canal drafts, certificates and awards for damages," passed April 17, 1860.
428. An act to amend an act entitled "An act to authorize the construction and maintenance of a bridge across the Erie canal in the town of Frankfort, Herkimer county, passed April 14, 1858.

429. (Assembly, No. 281.) An act to incorporate the Blind Mechanics' Association to be located in the city of New York.
430. (Assembly, No. 324.) An act to incorporate the Union Home and School for the education and maintenance of the children of volunteers.
431. (Assembly, No. 253.) An act for the appraisal and payment of canal damages to Richard Claxton.
432. (Assembly, No. 341.) An act to authorize the appraisal and payment of canal damages to Conley M. Morgan and Carter H. Morgan.
433. (Assembly, No. 340.) An act to authorize the appraisal and payment of canal damages to Samuel Morgan.
434. (Assembly, No. 289.) An act for the relief of Levi Bennett.
435. (Assembly, No. 288.) An act for the relief of James O'Brien.
436. (Assembly, No. 255.) An act for the relief of Otis Smith.
437. (Assembly, No. 361.) An act for the relief of the estate of David S. Colvin, deceased.
438. (Assembly, No. 331.) An act for the relief of John Lloyd.
439. (Assembly, No. 418.) An act to authorize the appraisal and payment of canal damages to Anne Sophia Hobby.
440. (Assembly, No. 345.) An act to authorize the appraisal and payment of canal damages to Walter O. Talcott.
441. (Assembly, No. 342.) An act for the relief of Allen T. Goldsmith for canal damages.
442. (Assembly, No. 385.) An act for the relief of John C. Adams for canal damages.
443. (Assembly, No. 451.) An act for the relief of Samuel Burns for canal damages.
444. (Assembly, No. 304.) An act to enable the schools of the children's aid society to participate in the distribution of the common school fund.
445. (Assembly, No. 212.) An act to provide for the licensing of ballast lighters in the port of New York.
446. (Assembly, No. 92.) To repeal part of an act passed April 15, 1858, entitled, "An act to amend an act to establish regulations for the port of New York," passed April 16, 1857.
447. (Assembly, No. 483.) An act to prevent animals from running at large in the public highways.

448. (Assembly, No. 249.) An act authorizing the commissioners of highways of the town of Westfield, Richmond county, to lay out and open a road in said town.
449. (Assembly, No. 301.) An act to provide for the opening and laying out of a highway in the towns of Wayne and Bradford, in the county of Steuben.
450. (Assembly, No. 308.) An act to authorize the trustees of Amsterdam village to transfer a portion of a highway at or near that place to the control of the town commissioners of the town of Amsterdam in the county of Montgomery.
451. (Assembly, No. 300.) An act to amend the charter of the Atlantic Fire Insurance Company, of Brooklyn.
452. (Assembly, No. 297.) An act to amend an act authorizing the formation of town insurance companies, passed April 17, 1857, as amended March 26, 1861.
453. (Assembly, No. 252.) An act to authorize the trustees of the village of Dunkirk to pay certain military expenses and to issue bonds for the same.
454. (Assembly, No. 273.) An act making it the duty of county officers and justices of the peace of the several counties of this State to report annually to the boards of supervisors of their respective counties.
455. (Assembly, No. 303.) An act to change the name of the town of Bucktooth in the county of Cattaraugus to Salamanca.
456. (Assembly, No. 298.) An act to change the name of the town of Newark in the county of Tioga to Newark Valley.
457. (Assembly, No. 268.) An act relative to the annual meeting of the supervisors of Rensselaer county.

State of New York.

No. 99.

IN SENATE,

April 12, 1862.

GENERAL ORDERS.

- 457. (Assembly, No. 287.) An act for the relief of Leora A. Poole.
- 458. (Assembly, No. 277.) An act to amend an act entitled "An act to amend and modify the several acts relating to the village of Newburgh, and to combine the same into one act," passed May 25, 1836.
- 459. (Assembly, No. 275.) An act relating to awnings in the city of Brooklyn.
- 460. (Assembly, No. 326.) An act to amend the charter of the village of Geneseo.
- 461. (Assembly, No. 158.) An act to exempt all that part of the city of Albany lying west of Allen street from certain taxes and assessments, and for auditing the accounts of the commissioner and overseers of highways in that district.
- 462. (Assembly, No. 263.) An act to amend the charter of the village of Hammondsport.
- 463. (Assembly, No. 278.) An act to prescribe the fire limits in the village of Newburgh.
- 464. (Assembly, No. 401.) An act to incorporate the Fireman's Saving Institution.
- 465. (Assembly, No. 255.) An act to amend the statutes concerning Teachers' Institutes, and otherwise in relation to public instruction.

State of New York.

No. 100.

IN SENATE,

April 10, 1862.

REPORT

OF THE COMMITTEE ON CANALS, ON THE BILL TO PROVIDE FOR THE ENLARGEMENT OF THE ERIE, OSWEGO AND CHAMPLAIN CANALS, SO AS TO ADMIT THE PASSAGE OF GUNBOATS AND VESSELS OF WAR.

The committee on canals, to which was referred the bill entitled "An act for the enlarging the locks upon the Erie and Oswego canals, for enlarging the Champlain canal and locks, and for the passage of boats, vessels, supplies and munitions of war belonging to the United States Government through said canals," have had the bill under consideration, and submit the following

REPORT:

The aggregate length of the canals of this State is 906 miles, and they have been constructed at a cost of \$58,371,790, exclusive of interest, without aid of any kind from the Government of the United States. The Auditor of the Canal Department, reports that the commercial tonnage borne upon the waters of these canals, in 1860, was more than 70 per cent of the whole import and export tonnage of the United States.

These works are supposed to be adequate to meet the requirements of this immense commerce, and all its ordinary increase for years to come.

While the enlarged Erie canal, with a depth of water of seven feet, and a width of seventy feet, is scarcely completed, the bill referred to your committee proposes a further immediate enlargement of its locks, and the enlargement of the Champlain canal and its locks, as well as those on the Oswego canal, not at the

expense of this State, but of the National Government. Such a proposition ought not to be sanctioned, at a time when the expenditures of the Government, for self-preservation, are reported at three millions of dollars per day; nor should any addition be made to the heavy taxes which are to be imposed upon our people, unless the proposed enlargement is required as a military necessity, and for purposes strictly national.

The frontier line between the United States and the British possessions, in North America, from its commencement in the St. Lawrence river, westerly through the great lakes, forms a length of water boundary of about fifteen hundred miles, to this should be added a thousand miles of coast on lake Michigan, of which one harbor, Green Bay, is as large as Long Island sound.

The American shore line of northern lakes, including bays, sounds and islands, is 3,620 miles. The British shore line, including bays, &c., is 2,629 miles.

Our coast is studded with flourishing cities and villages, surrounded with fields rich in harvests of grain, and these great lakes, well termed inland seas, are crossed, in every direction, on both sides of the boundary line, by large but unprotected fleets of steam and sail vessels, bearing freights which already exceed those of our sea board.

Shortly after the treaty of Ghent, a supplementary treaty was made between the government of the United States and that of Great Britain, in the following words :

"The naval force to be maintained upon the American lake, by His Majesty, and the Government of the United States, shall, henceforth, be confined to the following vessels on each side, that is :

"On lake Ontario, to one vessel, not exceeding one hundred tons burden, and armed with one eighteen-pound cannon.

"On the upper lakes, to two vessels, not exceeding like burden each, and armed with like force.

"On the waters of lake Champlain, to one vessel, not exceeding like burden, and armed with like force.

"All other armed vessels on these lakes shall be, forthwith, dismantled, and no other vessels of war shall be there built or armed.

"If either party should be hereafter desirous of annulling this stipulation, and should give notice to that effect to the other party, it shall cease to be binding after the expiration of six months from the date of such notice.

"The naval force so to be limited shall be restricted to such services as will in no respect interfere with the proper duties of the armed vessels of the other party."

Not only does this treaty prevent our placing on the lakes all vessels of war save those enumerated, but in case of unexpected hostilities, there is no channel, east, or west, or south, from the seaboard or the Mississippi, through which gunboats could be taken to the lakes in time to prevent the total destruction of their cities, villages, harvests, fleets, and commerce. On the other hand, Great Britain has secured herself against this danger on her part, by constructing canals and locks of sufficient capacity to pass gunboats of ample size for the protection of the cities, property and vessels of her subjects.

The canals around the rapids of the St. Lawrence are built to pass vessels, from that river to Lake Ontario, 186 feet long, 44½ feet beam, and 9 feet draught.

The Welland canal around the Falls of Niagara, connecting Lakes Ontario and Erie, will pass vessels 142 feet long, 26 feet beam, and 10 feet draught.

The Rideau canal, avowedly constructed for military purposes, occupies an interior line, comparatively remote from the frontier, and connecting Montreal with Kingston through the Ottawa river.

Of these works we do not complain, nor can Great Britain justly complain of us, or view it as an act of hostility, if the United States government takes immediate measure to place itself on an equal footing. We shall but follow her example.

The mere statement of the above facts, respecting the extent of the northern frontier, the magnitude of the interests and commerce at stake, and their defenceless position through the existing treaty, is sufficient to show that the opening into the great lakes of some channel of internal communication larger than any we now have, is strictly a national work, and plainly required by prudence as a measure of military necessity.

The idea that our canals could be speedily enlarged to pass vessels of war, of sufficient power to be useful in the defence of our northern and western frontier, would have seemed visionary a short time since, but in our efforts to enlarge our canals, solely to meet the requirements of commerce, we have brought them almost to a size to pass such iron clad steamers, as the astonishing lessons just taught by the Monitor, have demonstrated,

are to be our chief reliance, not only on our sea board but also on all our northern and western water frontiers.

It is also a matter of national interest, that in conjunction with the proposed enlargement of the channels of navigation between the Atlantic and great lakes, an increased commerce will be turned towards the sea board through two important outlets which are to be opened from the Mississippi river to the lakes.

One, is the improvement of the Fox and Wisconsin rivers through the State of Wisconsin, from Green Bay to Prairie du Chien, now nearly completed. This will be the outlet of the Upper Mississippi.

The other, is a proposed ship canal from Chicago through the State of Illinois, by enlarging the present canal and improving the Illinois river. This will be the outlet of the lower Mississippi. Both will form great branches of a water route, of which the enlarged Erie canal must be the main trunk. Both are worthy of National and State encouragement. They are quite distinct, and not antagonistic.

The ship canal from Chicago is one of great magnitude, the locks of which are to be 350 feet long by 70 feet wide. It involves an expenditure of \$9,292,444 at the lowest estimate, and can be completed in five years. The present canal transports a large quantity of grain, and yields a handsome revenue over ordinary repairs and expenses.

The improvement of the Fox and Wisconsin rivers, is 295 miles in length, of which about 175 miles are in successful operation. Its locks are 160 feet long by 35 feet wide.

The harbor of Green Bay, is protected against storms and invasion by numerous bold and rocky islands. The lower Fox has had an uninterrupted navigation for the last two years, passing steamboats and barges capable of carrying from eight to ten thousand bushels of wheat. The upper Fox is not yet fully improved, nevertheless it passes boats and barges of greater capacity than those of the old Erie canal.

By these two important routes, there will be in a few years, an unbroken navigation, between the harbor of New York and the Mississippi river. They will give a safe transit to our commercial and naval vessels through a fertile and populous region, and one too which has always been loyal to the Union. The necessity of such outlets has been demonstrated by an unnatural rebellion, which wilfully closed the lower Mississippi against the richest sources of her prosperity.

The commercial and agricultural interests of the Valley of the Mississippi, of the great lakes, and of the Erie canal, will ever be the most important in our country. They are surely entitled to the same military protection that is given to a smaller commerce on our Atlantic coast.

This can only be provided under our treaty with Great Britain, by opening channels from the east and west, through which, iron clad vessels can be moved without delay whenever the occasion may demand. The Erie, Champlain and Oswego canals are the only possible channels for this purpose east of the lakes.

According to the recent report of the State Engineer, (Assembly document No. 174,) these canals can be adapted to the passage of iron clad steamers of the dimensions therein mentioned at the following cost :

Enlarging the locks on the Erie canal.....	\$2,815,900 00
Enlarging the locks on the Oswego canal	625,500 00
Enlarging the locks and prism of the Champlain canal.....	3,770,190 00
	7,211,590 00

This work can readily be paid for in six per cent. stocks of the United States Government, payable at a day sufficiently distant to avoid any material increase of the present financial burdens or taxes of the country. For the comparatively trifling annual interest on its stock, the government will secure perpetual transit, free from toll and charges, on all its vessels, troops and munitions of war.

It will be necessary and proper, that the officers of the National Government be fully consulted, as to the size and character of the proposed works of enlargement. The whole of this work, so important to the national defence, can be speedily completed.

The committee accordingly report a bill for this purpose, and respectfully recommend its early passage.

All of which is respectfully submitted.

CHARLES COOK,
ALMANZOR HUTCHINSON,
RICHARD B. CONNOLLY.

State of New York.

No. 101.

IN SENATE,

April 14, 1862.

GENERAL ORDERS.

- 466. (Assembly, No. 296.) An act to incorporate the Cataract Fire Engine Company, No. 2, of the town of Castleton, county of Richmond.
- 467. (Assembly, No. 306.) An act for the better improvement of highways at Rockland Lake and vicinity.
- 468. (Assembly, No. 299.) An act in relation to boards of health in Orange and Chautauqua counties.
- 469. An act to authorize the electors of the town of Covert, in the county of Seneca, to vote a sum of money for the relief of Nathan B. Wheeler, and to raise the same by tax, and to pay the same.
- 470. (Assembly, No. 329.) An act in relation to the justices' courts and police courts in the city of Brooklyn.
- 471. (Assembly, No. 259.) An act to provide for the collection of demands against ships and vessels.
- 472. (Assembly, No. 338.) An act to enable the Harmony Fire and Marine Insurance Company to increase their capital and otherwise to amend their charter.

State of New York.

No. 102.

IN SENATE,

April 10, 1862.

REPORT

OF THE COMMITTEE ON CANALS, ON THE RESOLUTIONS OF
THE CANAL BOARD, RELATIVE TO A REDUCTION OF CANAL
TOLLS ON SALTED BEEF AND PORK.

The committee on canals, to which was referred the following resolution of the Canal Board :

"Resolved, if the Legislature concur, That the rates of toll on the following named articles, per thousand pounds per mile, be reduced as follows: On salted beef and pork, from two to one mill :"

Have had this resolution under consideration, and submit the following

REPORT :

That the Legislature, at its present session, have concurred with the Canal Board in reducing tolls on several articles of freight transported on the canals, as the railroads were carrying almost the entire quantity of that tonnage, and the revenue received by the State from those articles was so small, even in the aggregate, that if a reduction of tolls would bring a corresponding increase of tonnage, it might to some extent be a benefit to those navigating the canals, and in no event could it seriously affect the revenue, as the transportation of those articles are now almost entirely lost to the canals.

But these remarks do not apply to the articles of salted beef and pork, now under consideration. The revenues of the canals
[Senate, No. 102.]

are mainly derived from tonnage from the west, passing through our canals to tide water, and salted beef and pork forms a considerable item in that tonnage.

The following table will show the whole number of barrels of beef and pork transported on the canals of this State, from 1851 to 1861, both years inclusive :

	Bbls. pork.	Bbls. beef.	Total.
1851.....	58,712	85,326	144,038
1852.....	90,203	90,425	180,628
1853.....	125,200	97,450	222,650
1854.....	223,013	65,788	228,601
1855.....	101,662	62,220	163,882
1856.....	75,631	15,918	91,549
1857.....	20,584	14,349	34,933
1858.....	51,631	234,756	286,387
1859.....	57,712	50,256	107,968
1860.....	21,467	11,156	32,623
1861.....	15,500	25,968	41,468

Total, in 11 years.....	1,554,727
-------------------------	-----------

From the above, it will be seen that the number of barrels transported in each year is unequal, changing from a very high to a low number, but the average, for the eleven years, is 141,399 barrels, being but a fraction below the number of barrels transported in the year 1851.

There are no returns at the State Engineer's office, to which all the railroads in the State make returns of their business, showing the number of barrels of beef and pork transported by each of those roads; but they have returns from 1855 to 1861, both years inclusive, of the number of tons of the "Products of animals" transported over the New York Central and New York and Erie railroads, in each of the above named years. The term "Products of animals," includes "Pork, beef, bacon, cheese, butter, lard, tallow, lard oil, wool and hides." On the canal, live cattle, sheep and hogs are included under the head of "Other articles." On the railroads, the number of live animals transported is so large, it is presumed that account is kept under a special head, as live animals cannot be regarded as coming under the head of "Product of animals."

The following table gives the number of tons of the "Product of animals," transported on the New York Central, New York

and Erie railroads, and upon the New York State canals, in each year for the last seven years, beginning with the year 1855 :

	N. Y. Central, tons.	N. Y. and Erie, tons.	N. Y. State canal, tons.
1855.....	131,224	155,595	48,691
1856.....	161,807	170,098	33,826
1857.....	180,852	145,957	16,553
1858.....	172,076	178,076	65,166
1859.....	204,167	170,822	36,151
1860.....	223,362	201,823	19,822
1861.....	251,964	209,756	19,282
	<u>1,325,452</u>	<u>1,231,627</u>	<u>239,491</u>

The above aggregate of tonnage in the "Product of animals," transported on the two above named railroads and upon the New York State canals, for the last seven successive years, is :

New York Central railroad.....	1,325,452 tons.
New York and Erie railroad.....	1,231,627 "
New York State canals	239,491 "

Being a yearly average to the

New York Central railroad....	189,350 tons.
New York and Erie railroad.....	167,375 "
New York State canals.....	34,213 "

Of the above tonnage, which all goes toward tide-water, the two above named roads carry 90 per cent, and the canals 10 per cent of the whole amount ; in other words, the railroads carry 90 tons, and the canals carry 10 tons out of every 100 tons of this descending tonnage, which consists of the "Products of animals."

Take another view of this question : The whole tonnage transported on the canals of this State, for the year 1861, was 4,507,635 tons, of which only 329,744 tons was ascending tonnage, that is, tonnage going from tide-water west ; if the remainder was descending tonnage, as the larger portion doubtless was, then 92 per cent was descending tonnage, and 8 per cent ascending tonnage ; which leads us substantially to the same result, as the tonnage in the "Product of animals." This being true, out of every 100 boats that brought this descending tonnage to tide-water, eight of them would return with full loads, and 92 of them empty, or without any loading.

These facts, taken from official documents, show that not only

the revenues of the canals, but the earnings and employment of those navigating them, are mainly dependent upon the descending tonnage; to reduce tolls upon that tonnage now, would strike a fatal blow at the foundation source of the canal revenues; the true remedy would be, to impose canal tolls upon railroads, that are taking away this freight from the canals; and this, the present financial condition of the State would abundantly justify.

In every view the committee have been enabled to take of this subject, they find themselves constrained to differ with the Hon. Canal Board in their conclusion to reduce tolls on articles so prominent in descending tonnage, particularly when we remember the almost fabulous prices paid by shippers during the last season on freights going to tide-water.

After a careful and somewhat laborious examination of this subject, the committee have unanimously agreed upon the following resolution:

Resolved, That the resolution of the Canal Board, being Senate Document, No. 258, reducing tolls on salted beef and pork, ought not to be concurred in.

All of which is respectfully submitted.

CHARLES COOK,
ALMANZOR HUTCHINSON,
RICHARD B. CONNOLLY.

REPORT
OF
THE COMMISSIONERS

Appointed under the Act of April 15, 1857,

TO
EXAMINE PUBLIC ACCOUNTS.

ALBANY:
C. VAN BENTHUYSEN, PRINTER.
1862.

State of New York.

No. 103.

IN SENATE,

January 17, 1862.

REPORT

OF THE COMMISSIONERS APPOINTED UNDER THE ACT OF
APRIL 15, 1857, TO EXAMINE PUBLIC ACCOUNTS.

To the President of the Senate :

The undersigned commissioners, appointed under the act of April 15, 1857, to provide for the examination, annually, of the accounts of the Treasurer and Canal Department, and the securities of the Banking Department, submit to the Legislature the following report :

N. BRISTOL,
HARVEY KIDD,
Commissioners.

ALBANY, *January 17, 1862.*

TREASURER'S DEPARTMENT.

There was a balance in the treasury on the thirtieth day of September, 1860, as certified by the commissioners who examined the Treasurer's accounts for the fiscal year ending with that day, of three million two hundred and ninety-nine thousand five hundred and thirty-seven dollars and forty-nine cents

\$3,299,537 49

That there was paid into the treasury from all sources, as shown by the books of the Treasurer, and the certificates of the Comptroller, the Auditor, the Superintendent of Public Instruction, and the Superintendent of the Banking Department, for the fiscal year, the sum of sixteen million nine hundred and forty-two thousand nine hundred and seventy-seven dollars and fifty-three cents

16,942,977 53

Which sum, with the balance certified to as being in the treasury at the close of the 30th day of September, 1860, makes an aggregate to be accounted for of twenty million two hundred and forty-two thousand five hundred and fifteen dollars and two cents.....

20,242,515 02

In accounting for this sum, the Treasurer presented to us warrants drawn by the Comptroller upon the treasury, and paid therefrom, to the amount of ten million five hundred and thirty-seven thousand seven hundred and twenty dollars and forty-six cents

10,537,720 46

And warrants drawn by the Auditor of the Canal Department upon the treasury, and paid there-

from, to the amount of five million four hundred and eighty-three thousand five hundred and forty-eight dollars and fifty-three cents	\$5,483,548 53
And warrants drawn by the Superintendent of the Banking Department upon the treasury, and paid therefrom, to the amount of eighty-one thousand seven hundred and sixty-eight dollars and sixty-six cents	81,768 66
And warrants drawn by the Superintendent of Public Instruction upon the treasury, and paid therefrom, to the amount of one million sixty-four thousand five hundred and thirty-five dollars and fifty-two cents	1,064,535 52
Making the total payments from the treasury during the fiscal year ending the thirtieth day of September, 1861, the sum of seventeen million one hundred and sixty-seven thousand five hundred and seventy-three dollars and seventeen cents	17,167,573 17
Leaving a balance in the treasury at the close of the fiscal year of three million seventy-four thousand nine hundred and forty-one dollars and eighty-five cents	3,074,941 85
Which sum belongs to the following funds:	
To the Canal Fund, the sum of two million four hundred and thirty-five thousand eight hundred and forty-five dollars and four cents	2,435,845 04
To the Bank Fund, the sum of two thousand nine hundred and eighty-five dollars and thirty-seven cents	2,985 37
To the School Fund the sum of one thousand four hundred and eighty-seven dollars and sixty-six cents	1,487 66
And to the other funds of the State the sum of six hundred and thirty-four thousand six hundred and twenty-three dollars and seventy-eight cents	634,623 78
All of which was deposited according to law.	

COMPTROLLERS' DEPARTMENT.

We have discovered no error worthy of notice in the accounts of the several departments, nor any warrants unauthorized by law. The system by which errors are avoided and security to the State so amply secured, must be very faultless, as it certainly is proof of great care, and faithful application, of all the incumbents in the several offices.

We shall be excused for reiterating what, to all familiar with the duties and details of the respective departments, is apparent, the necessity of experienced and faithful clerks, and to the securing of such in the service of the State, their exemption from removal, as the changes in political majorities change the political complexion of their chiefs, is obvious.

Without expressing any opinion as to the sufficiency of their salaries, we are convinced that a liberal compensation, so liberal as to induce competent men to make these subordinate positions a life pursuit, is but simple justice to them, and the true policy for the State to pursue. Their business is a specialty, unlike the common business of the world. An education in its requirements will not enable them to be competitors in the various operations of ordinary business.

With unquestioned ability and devotion to their duties on the part of the heads of departments, it is not too much to say that experienced subordinates, deputies, and clerks have been mainly, and ever must be, depended upon to discharge the trusts committed to their care.

CANAL DEPARTMENT.

In compliance with the act, chap. 592, Laws of 1857, under which this examination is made, your Commissioners make the following report :

The following statement shows the balance belonging to the Canal Fund at the close of the fiscal year 1860, and the receipts and payments during the fiscal year ending thirtieth September, 1861, and from what sources received, and how applied.

There was on deposit in sundry banks, to the credit of the Treasurer of the State, on account of the Canal Fund, on the 30th September, 1860 (see page 79 of the last report),

The sum of.....	\$2,266,385 05
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And in the custody of the Auditor,

securities invested on account of

the Canal Fund, viz.	\$83,129 15
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Securities of real estate of Walter

Joy's Bank	20,354 06
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Real estate, &c., of the Bank of

Corning	5,149 50
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108,632 71

\$2,375,017 76

Appropriations overdrawn but refunded under chap. 365, Laws of 1857, viz. :

The Champlain canal	\$63,586 74
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Cayuga and Seneca canal ...	14,068 17
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Genesee Valley canal.....	25,092 20
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102,747 11

\$2,477,764 87

Carried forward	\$2,477,764 87
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Brought forward.....	\$2,477,764 87
Deduct overpayments as above included in accounts below	102,747 11
	\$2,375,017 76

*Received during the year ending 30th September,
1861, viz.:*

Sinking Fund for the redemption of the canal debt.....	\$1,231,533 98	
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals..	5,103 79	
Investment of premiums on loans	4,430 18	
Interest on loan for extraordinary repairs.....	3,000 00	
Interest on loan for the Albany basin	9,629 28	
Taxes of 1860	840,552 28	
Fund for the payment of the floating debt.....	9,991 31	
Fund for temporary loans	7,500 00	
Repair trust fund	65,000 00	
Erie canal enlargement.....	11,991 67	
Erie and Champlain canal	3,173,858 09	
Oswego canal	143,604 64	
Cayuga and Seneca canal	18,802 20	
Chemung canal.....	15,319 76	
Crooked Lake canal.....	699 94	
Chenango canal	23,438 70	
Black River canal	9,590 38	
Genesee Valley canal	29,702 31	
Oneida Lake canal.....	218 86	
Baldwinsville canal.....	22 57	
Oneida River improvement.....	919 63	
Seneca River towing-path	190 38	
Cayuga inlet.....	147 97	
		5,605,247 92
		\$7,980,265 68
Carried forward.....		\$7,980,265 68

Brought forward \$7,980,265 68

Paid during the same period, viz. :

Sinking Fund for the redemption of the canal debt.....	\$2,178,119 54	
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals ..	783,376 01	
Sinking Fund for the redemption of the loans for the payment of the floating debt	150,000 00	
Investment of premiums on loans.	1,750 96	
Interest on loan for extraordinary repairs	3,000 00	
Interest on loans to supply deficiencies	442,341 48	
Interest on loan to pay debts due prior to 1st June, 1846	6,000 00	
Interest on loan for Albany basin	9,629 28	
Fund for payment of the floating debt	64 43	
Fund for temporary loans	10,226 50	
Repair trust fund.....	2,000 00	
Erie canal enlargement.....	631,142 88	
Erie and Champlain canals.....	501,960 20	
Oswego canal	184,917 47	
Cayuga and Seneca canal	106,245 07	
Chemung canal.....	50,814 78	
Crooked Lake canal.....	7,084 21	
Chenango canal	63,634 70	
Black River canal	131,448 65	
Genesee Valley canal	89,603 06	
Oneida Lake canal	5,061 27	
Baldwinsville canal	1,069 60	
Oneida River improvement.....	16,080 35	
Cayuga inlet.....	73 99	
		5,375,644 43
Leaving a balance on 30th Sept., 1861	\$2,604,621 25	

Of the above balance there is on deposit in banks,
to the credit of the Treasurer of the State, on
account of the Canal Fund, the sum of \$2,435,845 04

In the custody of the Auditor, securities in-
vested on account of the Canal Fund, viz:

Bank Fund stock	\$37,743 15	
New York State and canal stocks,	106,880 00	
Securities of real estate of Walter Joy's Bank	20,354 06	
Real estate, &c., of Bank of Corn- ing	3,799 00	
		168,776 21
		\$2,604,621 25

Appropriations overdrawn, viz:

The Erie canal enlargement	\$85,754 00	
Champlain canal	32,381 82	
Cayuga and Seneca canal ...	25,545 02	
Genesee Valley canal.....	11,129 79	
		154,811 63
		\$2,759,432 88

Of the above amount there belongs to

Sinking Fund for the redemption of the canal debt	\$1,809,842 08
Sinking Fund for the General Fund debt	350,000 00
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals,	124,761 53
Sinking Fund for the redemption of the loans for the payment of the floating debt.....	87,500 00
Investment of premiums on loans	47,260 44
Fund for the completion of the canals.....	149,624 69
Fund for payment of the floating debt	90,804 79
Fund for temporary loans	1,949 82
Repair trust fund	63,000 00
Oswego canal.....	18,409 57
Crooked Lake canal	415 15
Chenango canal.....	1,717 00
Black River canal.....	14,147 81
	\$2,759,432 88

*Statement showing the balance on hand on the 30th September, 1861,
how deposited and invested, together with the names of the ac-
counts to which it belongs.*

DEPOSITED.

<i>Names of banks.</i>	<i>Amounts.</i>
Albany City Bank	\$146,013 17
Atlantic Bank, New York	13,302 65
Bank of Albion	3,755 48
Bank of Attica, Buffalo	62,078 50
Bank of Auburn	52,689 01
Bank of Bath	2,000 00
Bank of Chenango	2,000 00
Bank of Dansville	1,480 95
Bank of Fayetteville	12,000 00
Bank of Fort Edward	5,146 23
Bank of Geneva	9,364 27
Bank of Havana	5,327 23
Bank of Norwich	1,258 13
Bank of Seneca Falls	3,157 40
Bank of Utica	12,327 36
Bank of West Troy	9,880 45
Bank of Whitehall	7,591 27
Buffalo City Bank	62,003 32
Central Bank, Troy	9,904 33
Central City Bank, Syracuse	6,304 93
Citizen' Bank, Fulton	10,153 41
City Bank, Oswego	49,697 48
Clinton Bank, Buffalo	61,844 26
Commercial Bank, Albany	352,000 00
Commercial Bank, Rochester	8,580 65
Commercial Bank, Troy	9,905 03
Commercial Bank, Whitehall	9,579 70
Carried forward	

Brought forward	
Names of Banks.	Amounts.
Cuba Bank	8,369 20
Cuyler's Bank	3,726 08
Elmira Bank	12,440 83
Exchange Bank, Lockport	5,722 41
Farmers' Bank of Amsterdam	2,000 00
Farmers' Bank of Washington County, Ft. Edward	5,162 81
Farmers' and Citizens' Bank, Brooklyn	11,915 59
Farmers' and Mechanics' Bank of Genesee, Buffalo	62,103 09
Farmers' and Mechanics' Bank, Rochester	11,579 57
Flour City Bank, Rochester	9,709 38
Frontier Bank, Potsdam	2,000 00
Genesee River Bank, Mt. Morris	4,608 08
George Washington Bank, Corning	5,814 14
Hamilton Bank	4,000 00
Herkimer County Bank, Little Falls	6,612 10
International Bank, Buffalo	61,781 27
J. N. Hungerford's Bank, Corning	5,810 35
J. T. Raplee's Bank, Penn Yan	3,018 18
Lake Ontario Bank, Oswego	49,768 79
Lyons Bank	2,612 79
Manhattan Co. Bank, New York	33,034 69
Manufacturers' Bank, Troy	9,881 59
Marine Bank, Buffalo	61,795 77
Marine Bank, Oswego	49,280 72
Mechanics' and Farmers' Bank, Albany	144,328 89
Mechanics' Bank, Syracuse	6,306 82
Merchants' Bank, Albany	9,933 86
Mohawk River Bank, Fonda	4,721 85
Monroe County Bank, Rochester	12,581 03
Mutual Bank, Troy	9,878 25
New York and Erie Bank, Buffalo	61,823 11
New York State Bank, Albany	148,325 73
Niagara County Bank, Lockport	9,690 74
Oneida Central Bank, Rome	6,774 17
Oneida County Bank, Utica	10,267 61
Orleans County Bank, Albion	5,928 14
Oswego River Bank	9,723 66
Rome Exchange Bank	8,057 21

Carried forward

Brought forward	
Names of Banks.	Amounts.
Salt Springs Bank, Syracuse	\$10,206 87
Saratoga County Bank, Waterford	5,885 94
Schenectady Bank	2,931 06
Shoe and Leather Bank, New York	13,300 74
Susquehanna Valley Bank, Binghamton	7,716 92
Union Bank, Albany	23,760 37
Union Bank, Troy	9,909 78
White's Bank, Buffalo	62,169 36
Available	<u>\$1,946,314 75</u>
Artisans' Bank, New York	\$21,070 44
Bank of Albany	98,375 37
Bank of Corning	11,135 63
Bank of Hornellsville	10,554 11
Bank of the Interior, Albany	38,017 90
Brockport Exchange Bank	14,892 39
Canal Bank, Albany	59,252 41
Canal Bank, Lockport	11,231 20
Empire City Bank	9,986 16
Hollister Bank	23,366 53
Lockport Bank and Trust Company	7,917 46
Medina Bank	7,703 08
National Bank, Albany	24,672 80
Niagara River Bank	4,341 40
Oliver Lee & Company's Bank	29,042 84
Pratt Bank	22,487 06
Reciprocity Bank	32,451 45
Walter Joy's Bank	60,032 06
Western Bank, Lockport	3,000 00
Unavailable	<u>\$489,530 29</u>
Amount deposited in banks, available	\$1,946,314 75
Amount deposited in banks, unavailable	489,530 29
	<u>\$2,435,845 04</u>

BANKING DEPARTMENT.

The following is a statement in detail of the securities held in trust for each Banking Association, and Individual Banker, and the amount of circulating notes issued and outstanding on the 30th day of September, 1861. Also, the capital of the Banking Associations, and Individual Bankers, respectively, as reported in their quarterly reports of September 21st, 1861.

1. ADDISON BANK, ADDISON, (CAPITAL, \$10,000.)

Bonds and mortgages	\$1,400 00	
New York State stock, 6 per cent.	8,150 00	
		\$9,550 00
Circulation.....		8,596 00

2. ALBANY EXCHANGE BANK, ALBANY, (CAPITAL, \$311,100.)

Bonds and mortgages.....	\$1,500 00	
New York State stock, 5 per cent.	34,000 00	
do do 6 do	15,000 00	
do do 7 do	6,000 00	
United States stock, 5 do	32,000 00	
do do 6 do	23,000 00	
		111,500 00
Circulation.....		101,965 00

3. ALBION, BANK OF, ALBION, (CAPITAL, \$100,000.)

Bonds and mortgages	\$35,545 00	
New York State stock, 5 per cent.	5,000 00	
do do 5½ do	1,000 00	
do do 6 do	43,000 00	
United States stock, 5 do	10,000 00	
		94,545 00
Circulation.....		92,454 00

4. AMERICA, BANK OF, NEW YORK, (CAPITAL, \$3,000,000.)

New York State stock, 6 per cent.	\$150,000 00	
United States do 5 do	120,000 00	
		270,000 00
Circulation.....		216,000 00

5. AMERICAN EXCHANGE BANK, N. Y., (CAPITAL, \$5,000,000.)

New York State stock, 6 per cent.	\$83,000 00	
United States do 5 do	91,000 00	
Illinois State do 6 do	285,500 00	
		\$459,500 00
Circulation.....		369,310 00

6. AMSTERDAM, BANK OF, AMSTERDAM, (CAPITAL, \$90,125.)

New York State stock, 5 per cent.	\$50,000 00	
		50,000 00
Circulation.....		30,000 00

7. ATLANTIC BANK OF THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$400,000.)

New York State stock, 5 per cent.	\$57,200 00	
do do 6 do	30,000 00	
United States stock 6 do	25,000 00	
		112,200 00
Circulation.....		106,586 00

8. ATTICA, BANK OF, BUFFALO, (CAPITAL, \$250,000.)

Bonds and mortgages.....	\$15,400 00	
New York State stock, 6 per cent.	27,000 00	
		42,400 00
Circulation.....		42,399 00

9. AUBURN, BANK OF, AUBURN, (CAPITAL, \$200,000.)

New York State stock, 5 per cent.	\$20,000 00	
do do 6 do	95,500 00	
		115,500 00
Circulation		113,900 00

10. AUBURN CITY BANK, AUBURN, (CAPITAL, \$200,000.)

New York State stock, 6 per cent.	\$90,000 00	
		90,000 00
Circulation.....		90,000 00

11. AUBURN EXCHANGE BANK, AUBURN, (CAPITAL, \$200,000.)

New York State stock, 5 per cent.	\$111,500 00	
do do 6 do	17,500 00	
		129,000 00
Circulation.....		118,960 00

12. ARTISAN'S BANK, NEW YORK, (CAPITAL, \$600,000.)

New York State stock, 6 per cent.	\$3,000 00	
		3,000 00
Circulation.....		3,000 00

13. BALLSTON SPA BANK, BALLSTON, (CAPITAL, \$125,000.)

Bonds and mortgages	\$2,000 00	
New York State stock, 5 per cent.	50,000 00	
do do 6 do	30,000 00	
		\$82,000 00
Circulation.....		78,000 00

14. BANK OF BATH, BATH, (CAPITAL, \$50,000.)

Bonds and mortgages	\$36,392 00	
New York State stock, 5 per cent.	12,500 00	
do do 6 do	25,000 00	
United States stock, 6 do	5,000 00	
		78,892 00
Circulation.....		71,700 00

15. BANK OF BINGHAMTON, BINGHAMTON, (CAPITAL, \$300,000.)

Bonds and mortgages	\$72,430 00	
New York State stock, 5 per cent.	35,500 00	
do do 6 do	39,000 00	
United States stock 5 do	11,000 00	
do do 6 do	15,000 00	
		172,930 00
Circulation.....		167,350 00

16. BLACK RIVER BANK, WATERTOWN, (CAPITAL, \$100,000.)

Bonds and mortgages	\$32,005 00	
New York State stock, 5 per cent.	50,000 00	
do do 6 do	15,000 00	
		97,005 00
Circulation.....		68,000 00

17. BOWERY BANK OF THE CITY OF NEW YORK, NEW YORK,
(CLOSING—JOHN A. STEWART, RECEIVER.)

New York State stock, 5 per cent.	\$10,000 00	
		10,000 00
Circulation.....		7,650 00

18. BRIGGS' BANK OF CLYDE, CLYDE, (CAPITAL, \$25,000.)

Bonds and mortgages	\$19,995 00	
New York State stock, 6 per cent.	15,000 00	
United States stock, 6 do	12,000 00	
		46,995 00
Circulation.....		45,787 00

19. BROADWAY BANK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 6 per cent.	\$167,300 00	
do do 7 do	250,000 00	
		417,300 00
Circulation.....		413,800 00

20. BROCKPORT EXCHANGE BANK, BROCKPORT, (FAILED—No Report.)

Bonds and mortgages	\$14,946 00	
New York State stock, 6 per cent.	15,000 00	
Cash in deposit	220 00	
		\$30,166 00
Circulation		29,796 00

21. BROOKLYN BANK, BROOKLYN, (CAPITAL, \$300,000.)

New York State stock, 5 per cent.	\$25,000 00	
do do 6 do	52,000 00	
United States stock, 5 do	20,000 00	
do do 6 do	35,000 00	
		132,000 00
Circulation		118,564 00

22. BROOME COUNTY BANK, BINGHAMTON, (CAPITAL, \$100,000.)

New York State stock, 5 per cent.	\$12,000 00	
do do 6 do	80,000 00	
		92,000 00
Circulation		85,000 00

23. BUFFALO CITY BANK, BUFFALO, (CAPITAL, \$150,000.)

Bonds and mortgages	\$16,500 00	
New York State stock, 5 per cent.	15,000 00	
do do 6 do	2,250 00	
		33,750 00
Circulation		31,800 00

24. BULL'S HEAD BANK OF THE CITY OF NEW YORK, N. YORK,
(CAPITAL, \$200,000.)

New York State stock, 5 per cent.	\$64,000 00	
do do 6 do	62,000 00	
United States stock, 5 do	25,000 00	
		151,000 00
Circulation		143,796 00

25. BURNET BANK, SYRACUSE, (CAPITAL, \$60,000.)

Bonds and mortgages	\$22,940 00	
New York State stock, 6 per cent.	25,500 00	
		48,440 00
Circulation		48,437 00

26. BUTCHERS' & DROVERS' BANK IN THE CITY OF N. YORK,
NEW YORK, (CAPITAL, \$300,000.)

New York State stock, 6 per cent.	\$278,400 00	
United States stock, 6 do	51,600 00	
		330,000 00
Circulation		327,000 00

27. CAMBRIDGE VALLEY BANK, AT NORTH WHITE CREEK,
NORTH WHITE CREEK, (CAPITAL, \$172,000.)

Bonds and mortgages	\$42,675 00	
New York State stock, 6 per cent.	38,000 00	
United States stock, 5 do	14,000 00	
		\$94,675 00
Circulation.....		93,298 00

28. CANAJOHARIE BANK, CANAJOHARIE, (CAPITAL, \$125,000.)

Bonds and mortgages	\$31,728 00	
New York State stock, 5 per cent.	8,000 00	
do do 6 do	22,700 00	
United States stock, 5 do	30,000 00	
		92,428 00
Circulation.....		89,000 00

29. CANANDAIGUA, BANK OF, CANANDAIGUA, (CAP'L, \$26,000.)

Bonds and mortgages	\$31,004 00	
New York State stock, 6 per cent.	31,500 00	
		62,504 00
Circulation.....		62,496 00

30. CANASTOTA BANK, CANASTOTA, (CAPITAL, \$116,000.)

Bonds and mortgages	\$40,244 00	
New York State stock, 6 per cent.	48,000 00	
United States stock, 6 do	10,000 00	
		98,244 00
Circulation.....		94,945 00

31. CATSKILL BANK, CATSKILL, (CAPITAL, \$145,132.)

New York State stock, 5 per cent.	\$19,000 00	
do do 5½ do	6,000 00	
do do 6 do	53,400 00	
United States stock, 5 do	23,000 00	
		101,400 00
Circulation.....		98,040 00

32. CATUGA LAKE, BANK OF, PAINTED POST, (CAP'L, \$10,000.)

New York State stock, 5 per cent.	\$10,000 00	
United States stock, 5 do	10,000 00	
		20,000 00
Circulation.....		19,095 00

33. CAZENOVIA, BANK OF, CAZENOVIA, (CAPITAL, \$150,000.)

Bonds and mortgages	\$43,692 00	
New York State stock, 5 per cent.	25,000 00	
do do 6 do	20,000 00	
United States stock, 5 do	5,000 00	
do do 6 do	5,000 00	
		98,692 00
Circulation.....		93,866 00

34. CENTRAL BANK OF BROOKLYN, BROOKLYN, (CAP'L, \$200,000.)

New York State stock, 5 per cent.	\$23,000 00	
do do 6 do	35,000 00	
		\$58,000 00
Circulation.....		56,260 00

35. CENTRAL BANK AT CHERRY VALLEY, CHERRY VALLEY,
(CAPITAL, \$200,000.)

Bonds and mortgages	\$51,013 00	
New York State stock, 5 per cent.	51,000 00	
United States stock, 5 do	16,000 00	
do do 6 do	34,000 00	
		152,013 00
Circulation.....		142,000 00

36. CENTRAL CITY BANK, SYRACUSE, (CAPITAL, \$125,200.)

Bonds and mortgages	\$15,944 00	
New York State stock, 5 per cent.	5,000 00	
do do 6 do	22,500 00	
United States stock, 6 do	4,000 00	
		47,444 00
Circulation.....		46,720 00

37. CENTRAL BANK OF TROY, TROY, (CAPITAL, \$300,000.)

Bonds and mortgages	\$29,062 00	
New York State stock, 5 per cent.	32,000 00	
do do 6 do	20,000 00	
United States stock, 5 do	10,000 00	
		91,062 00
Circulation.....		82,575 00

38. CENTRAL NEW YORK, BANK OF, UTICA, (CLOSING—JOSEPH
BENEDICT, RECEIVER.)

Bonds and mortgages	\$2,500 00	
New York State stock, 6 per cent.	10,000 00	
		12,500 00
Circulation.....		12,500 00

39. CHATHAM BANK, NEW YORK, (CAPITAL, \$450,000.)

New York State stock, 6 per cent.	\$111,700 00	
		111,700 00
Circulation.....		111,316 00

40. CHAUTAUQUA COUNTY BANK, JAMESTOWN, (CAP'L, \$89,840.)

Bonds and mortgages	\$12,545 00	
New York State stock, 6 per cent.	10,000 00	
		22,545 00
Circulation.....		20,000 00

41. CHEMICAL BANK, NEW YORK, (CAPITAL, \$300,000.)

New York State stock, 5 per cent.	\$117,700 00	
do do 6 do	167,200 00	
United States stock, 5 do	135,000 00	
do do 6 do	93,400 00	
		\$513,300 00
Circulation.....		481,900 00

42. CHESTER BANK, CHESTER, (CAPITAL, \$125,500.)

Bonds and mortgages.....	\$3,000 00	
New York State stock, 5 per cent.	54,224 00	
do do 6 do	26,000 00	
United States stock, 5 do	15,000 00	
do do 6 do	2,000 00	
		100,224 00
Circulation.....		97,378 00

43. CHEMUNG, BANK OF, ELMIRA, (CAPITAL, \$50,000.)

Bonds and mortgages	\$17,240 00	
New York State stock, 5 per cent.	500 00	
do do 6 do	31,000 00	
		48,740 00
Circulation.....		47,672 00

44. CHENANGO, BANK OF, NORWICH, (CAPITAL, \$150,000.)

Bonds and mortgages	\$17,398 00	
New York State stock, 5 per cent.	10,000 00	
do do 6 do	40,000 00	
United States stock, 5 do	25,000 00	
		92,398 00
Circulation.....		89,521 00

45. CHITTENANGO BANK, CHITTENANGO, (CAPITAL, \$150,000.)

Bonds and mortgages	\$35,976 00	
New York State stock, 4½ per cent.	800 00	
do do 6 do	50,000 00	
		86,776 00
Circulation.....		86,736 00

46. CITIZENS' BANK, FULTON, (CAPITAL, \$166,100.)

Bonds and mortgages	\$17,335 00	
New York State stock, 6 per cent.	53,500 00	
		70,835 00
Circulation.....		70,835 00

47. CITIZENS' BANK, NEW YORK, (CAPITAL, \$400,000.)

New York State stock, 4½ per cent.	\$5,000 00	
do do 6 do	162,000 00	
		167,000 00
Circulation.....		166,730 00

48. CITY BANK OF BROOKLYN, BROOKLYN, (CAPITAL, \$300,000.)

New York State stock, 5 per cent.	\$30,000 00	
do do 6 do	35,000 00	
United States stock, 6 do	35,000 00	
		<u>\$100,000 00</u>
Circulation.....		93,800 00

49. CITY BANK OF NEW YORK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 6 per cent.	\$5,500 00	
United States stock, 6 do	4,500 00	
		<u>10,000 00</u>
Circulation.....		

50. CITY BANK, OSWEGO, (CAPITAL, \$276,400.)

Bonds and mortgages	\$32,250 00	
New York State stock, 5 per cent.	20,000 00	
do do 6 do	12,000 00	
		<u>64,250 00</u>
Circulation.....		60,792 00

51. CITY BANK OF POUGHKEEPSIE, POUGHKEEPSIE,
(CAPITAL, \$183,000.)

New York State stock, 5 per cent.	\$19,000 00	
do do 6 do	15,000 00	
do do 7 do	15,000 00	
United States stock, 5 do	15,000 00	
do do 6 do	35,000 00	
		<u>99,000 00</u>
Circulation.....		91,280 00

52. CLINTON BANK OF BUFFALO, BUFFALO, (CAPITAL, \$250,000.)

Bonds and mortgages	\$5,000 00	
New York State stock, 5 per cent.	22,000 00	
		<u>27,000 00</u>
Circulation.....		25,000 00

53. COHOES, BANK OF, COHOES, (CAPITAL, \$72,150.)

New York State stock, 5 per cent.	\$34,351 00	
do do 6 do	12,000 00	
do do 7 do	10,000 00	
United States stock, 5 do	12,000 00	
		<u>68,351 00</u>
Circulation.....		65,564 00

**59. COMMERCIAL BANK OF SARATOGA SPRINGS, SARATOGA
SPRINGS, (CAPITAL, \$125,000.)**

New York State stock, 6 per cent.....	\$80,000 00	
		\$80,000 00
Circulation		80,000 00

60. COMMERCIAL BANK OF TROY, TROY, (CAPITAL, \$300,000.)

Bonds and mortgages.....	\$52,290 00	
New York State stock, 6 per cent.....	113,900 00	
		166,190 00
Circulation		127,864 00

**61. COMMERCIAL BANK OF WHITEHALL, WHITEHALL,
(CAPITAL, \$108,200.)**

New York State stock, 5 per cent.....	\$17,000 00	
do do 6 do	85,000 00	
		102,000 00
Circulation		100,276 00

**62. COMMERCE IN NEW YORK, BANK OF, NEW YORK,
(CAPITAL, \$9,148,480.)**

New York State stock, 6 per cent.....	\$9,000 00	
		9,000 00
Circulation		1,975 00

**63. COMMERCE OF PUTNAM COUNTY, BANK OF, CARMEL,
(CAPITAL, \$85,117.)**

Bonds and mortgages	\$41,600 00	
New York State stock, 5 per cent.....	7,637 00	
do do 6 do	26,100 00	
United States stock, 6 do	10,000 00	
		85,387 00
Circulation		84,096 00

**64. COMMONWEALTH, BANK OF THE, NEW YORK,
(CAPITAL, \$750,000.)**

New York State stock, 5 per cent.....	\$95,000 00	
do do 6 do	82,500 00	
United States stock, 5 do	155,000 00	
do do 6 do	13,000 00	
		345,500 00
Circulation		313,378 00

65. CONTINENTAL BANK, NEW YORK, (CAPITAL, \$2,000,000.)

New York State stock, 5 per cent.....	\$98,000 00	
do do 6 do	85,000 00	
United States stock, 5 do	100,000 00	
		283,000 00
Circulation		267,220 00

66. COOPERSTOWN, BANK OF COOPERSTOWN, (CAPITAL, \$200,000.)

Bonds and mortgages	\$62,113 00	
New York State stock, 4½ per cent.....	1,000 00	
do do 5 do	23,000 00	
do do 6 do	42,700 00	
United States stock, 5 do	30,000 00	
do do 6 do	20,000 00	
		\$178,813 00
Circulation		174,000 00

67. CORN EXCHANGE BANK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 6 per cent.....	\$150,000 00	
United States stock, 6 do	80,000 00	
		230,000 00
Circulation		220,939 00

68. COXSACKIE, BANK OF, COXSACKIE, (CAPITAL, \$142,000.)

Bonds and mortgages.....	\$8,660 00	
New York State stock, 6 per cent.....	62,000 00	
		70,660 00
Circulation		70,629 00

69. CROTON RIVER BANK, SOUTH EAST, (CAPITAL, \$107,500.)

Bonds and mortgages.....	\$51,860 00	
New York State stock, 5 per cent.....	19,500 00	
do do 6 do	8,000 00	
do do 7 do	2,000 00	
United States stock, 5 do	8,000 00	
do do 6 do	19,000 00	
		108,360 00
Circulation		105,053 00

70. CUBA BANK, CUBA, (CAPITAL, \$100,000.)

Bonds and mortgages.....	\$46,555 00	
New York State stock, 6 per cent.....	50,000 00	
		96,555 00
Circulation		91,516 00

71. CUYLER'S BANK, PALMYRA, (CAPITAL, \$74,000.)

Bonds and mortgages.....	\$28,588 00	
New York State stock, 5 per cent.....	25,000 00	
do do 6 do	12,000 00	
United States stock, 5 do	18,000 00	
		83,588 00
Circulation		81,968 00

72. DANSVILLE, BANK OF, DANSVILLE, (CAPITAL, \$150,250.)

Bonds and mortgages.....	\$24,900 00	
New York State stock, 5 per cent.....	19,780 00	
do do 6 do	16,000 00	
United States stock, 5 do	3,000 00	
		\$63,680 00
Circulation		61,681 00

73. DELAWARE BANK, DELHI, (CAPITAL, \$150,000.)

New York State stock, 5 per cent.....	\$44,000 00	
do do 6 do	10,000 00	
United States stock, 5 do	40,000 00	
do do 6 do	7,000 00	
Illinois State stock, 6 do	6,000 00	
Michigan State stock, 6 do	15,000 00	
		122,000 00
Circulation		106,355 00

74. DEPOSIT BANK, DEPOSIT, (CAPITAL, \$125,000.)

Bonds and mortgages.....	\$38,323 00	
New York State stock, 5 per cent.....	15,000 00	
do do 6 do	45,000 00	
United States stock, 6 do	10,000 00	
		108,323 00
Circulation		96,000 00

75. DOVER PLAINS BANK, DOVER, (CAPITAL, \$100,000.)

New York State stock, 5 per cent.....	\$23,000 00	
do do 6 do	23,500 00	
United States stock, 5 do	22,000 00	
		68,500 00
Circulation		65,340 00

76. EAST RIVER BANK, NEW YORK, (CAPITAL, \$206,525.)

New York State stock, 5 per cent.....	\$70,000 00	
do do 6 do	28,000 00	
United States stock, 5 do	17,000 00	
		115,000 00
Circulation		107,400 00

77. ELMIRA BANK, ELMIRA, (CAPITAL, \$100,000.)

Bonds and mortgages.....	\$16,600 00	
New York State stock, 4½ per cent.....	2,000 00	
do do 5 do	16,000 00	
		34,600 00
Circulation		33,154 00

78. EXCHANGE BANK AT LOCKPORT, LOCKPORT,
(CAPITAL, \$150,000.)

Bonds and mortgages.....	\$32,036 00	
New York State stock, 4½ per cent.....	1,000 00	
do do 5 do	3,000 00	
do do 5½ do	1,000 00	
do do 6 do	11,134 77	
United States stock, 5 do	19,000 00	
		\$67,160 77
Circulation		63,656 00

79. FALLKILL BANK, POUGHKEEPSIE, (CAPITAL, \$200,000.)

New York State stock, 5 per cent.....	\$45,600 00	
do do 6 do	22,600 00	
United States stock, 5 do	10,000 00	
do do 6 do	5,000 00	
		\$83,100 00
Circulation		78,252 00

80. FARMERS' BANK OF AMSTERDAM, AMSTERDAM,
(CAPITAL, \$200,000.)

Bonds and mortgages.....	\$17,900 00	
New York State stock, 5 per cent.....	30,000 00	
do do 6 do	40,000 00	
United States stock, 5 do	5,000 00	
		92,900 00
Circulation		90,110 00

81. FARMERS' BANK OF ATTICA, BATAVIA, (CAPITAL, \$40,000.)

Bonds and mortgages.....	\$24,534 00	
New York State stock, 5 per cent.....	10,000 00	
do do 6 do	15,000 00	
United States stock, 6 do	3,000 00	
		52,534 00
Circulation		52,033 00

82. FARMERS' BANK OF HUDSON, HUDSON, (CAPITAL, \$300,000.)

Bonds and mortgages.....	\$14,600 00	
New York State stock, 5 per cent.....	44,000 00	
do do 6 do	26,000 00	
United States stock, 5 do	15,000 00	
do do 6 do	23,000 00	
		122,600 00
Circulation		116,472 00

83. FARMERS' BANK OF LANSINGBURGH, LANSINGBURGH,
(CAPITAL, \$172,000.)

Bonds and mortgages	\$5,650 00	
New York State stock, 5 per cent.	7,600 00	
do do 6 do	20,000 00	
		\$33,250 00
Circulation.....		29,462 00

84. FARMERS' BANK OF THE CITY OF TROY, TROY,
(CAPITAL, \$350,000.)

Bonds and mortgages.....	\$24,826 00	
New York State stock, 5 per cent.	10,000 00	
do do 6 do	47,000 00	
		81,826 00
Circulation.....		79,526 00

85. FARMERS' BANK OF WASHINGTON COUNTY, FORT EDWARD,
(CAPITAL, \$169,850.)

Bonds and mortgages.....	\$41,255 00	
New York State stock, 6 per cent.	38,000 00	
		79,255 00
Circulation		75,319 00

86. FARMERS' AND CITIZENS' BANK OF LONG ISLAND,
BROOKLYN, (CAPITAL, \$160,000.)

New York State stock, 5 per cent.	\$43,000 00	
do do 6 do	17,040 00	
United States stock 5 do	21,000 00	
do do 6 do	3,000 00	
		84,040 00
Circulation.....		79,200 00

87. FARMERS' AND DROVERS' BANK, SOMERS,
(CAPITAL, \$111,150.)

Bonds and mortgages.....	\$7,500 00	
New York State stock, 5 per cent.	5,000 00	
do do 6 do	30,000 00	
United States stock, 5 do	32,000 00	
		74,500 00
Circulation.....		71,170 00

88. FARMERS' AND MECHANICS' BANK OF GENESEE, BUFFALO,
(CAPITAL, \$150,000.)

Bonds and mortgages	\$18,150 00	
New York State stock, 6 per cent.	14,000 00	
United States stock, 5 do	7,000 00	
		39,150 00
Circulation.....		38,000 00

89. FARMERS' AND MECHANICS' BANK OF ROCHESTER,
ROCHESTER, (CAPITAL, \$125,000.)

Bonds and mortgages	\$45,464 00	
New York State stock, 4½ per cent.....	4,850 00	
do do 5 do	30,000 00	
do do 6 do	25,000 00	
Illinois State do 6 do	8,250 00	
		\$113,564 00
Circulation.....		109,457 00

90. FAYETTEVILLE, BANK OF, FAYETTEVILLE, (CAP'L, \$115,400.)

Bonds and mortgages	\$44,623 00	
New York State stock, 5 per cent.	20,000 00	
do do 6 do	33,000 00	
		97,623 00
Circulation.....		92,300 00

91. FISHKILL, BANK OF, FISHKILL, (CAPITAL, \$150,000.)

New York State stock, 5 per cent.....	\$79,000 00	
do do 6 do	12,000 00	
do do 7 do	10,000 00	
United States stock, 5 do	6,000 00	
		107,000 00
Circulation.....		100,000 00

92. FLOUR CITY BANK, ROCHESTER, (CAPITAL, \$300,000.)

Bonds and mortgages	\$49,700 00	
New York State stock, 5 per cent.	1,000 00	
do do 6 do	55,000 00	
		105,700 00
Circulation.....		105,600 00

93. FORT EDWARD, BANK OF, FORT EDWARD, (CAP'L, \$200,000.)

Bonds and mortgages	\$45,400 00	
New York State stock, 5 per cent.	5,000 00	
do do 6 do	21,500 00	
do do 7 do	20,000 00	
		91,900 00
Circulation.....		85,315 00

94. FORT PLAIN BANK, FORT PLAIN, (CAPITAL, \$150,000.)

Bonds and mortgages	\$27,146 00	
New York State stock, 5 per cent.	22,400 00	
do do 6 do	55,000 00	
Michigan State stock, 6 do	5,000 00	
		109,546 00
Circulation.....		107,700 00

95. FORT STANWIX BANK, ROME, (CAPITAL, \$150,000.)

Bonds and mortgages	\$49,750 00	
New York State stock, 5 per cent.	36,500 00	
do do 6 do	14,000 00	
United States stock, 5 do	20,000 00	
do do 6 do	5,000 00	
		\$125,250 00
Circulation.....		116,758 00

96. FRANKFORT BANK, FRANKFORT, (CAPITAL, \$105,000.)

Bonds and mortgages	\$41,944 00	
New York State stock, 5 per cent.	23,300 00	
do do 6 do	14,500 00	
		79,744 00
Circulation.....		69,767 00

97. FREDONIA BANK, FREDONIA, (CAPITAL, \$100,000.)

Bonds and mortgages	\$48,360 00	
New York State stock, 5 per cent.	55,000 00	
do do 6 do	1,000 00	
		104,360 00
Circulation.....		99,953 00

98. FRONTIER BANK, POTSDAM, (CAPITAL, \$100,000.)

Bonds and mortgages	\$48,229 00	
New York State stock, 5 per cent.	10,000 00	
do do 6 do	30,000 00	
United States stock, 6 do	10,000 00	
		98,229 00
Circulation.....		95,228 00

99. FULTON BANK IN THE CITY OF NEW YORK, NEW YORK,
(CAPITAL, \$600,000.)

New York State stock, 4½ per cent.	\$40,000 00	
do do 5 do	100,000 00	
United States stock 5 do	140,000 00	
		280,000 00
Circulation.....		258,950 00

100. FULTON COUNTY BANK, GLOVERSVILLE, (CAP'L, \$150,000.)

Bonds and mortgages.....	\$40,156 00	
New York State stock, 6 per cent.	31,000 00	
United States stock, 6 do	10,000 00	
		81,156 00
Circulation.....		79,993 00

101. GENESEE COUNTY BANK, LE ROY, (CAPITAL, \$150,000.)

Bonds and mortgages	\$28,274 00	
New York State stock, 6 per cent.	55,000 00	
		\$83,274 00
Circulation.....		83,274 00

102. GENESEE RIVER BANK, MOUNT MORRIS, (CAP'L, \$130,000.)

Bonds and mortgages	\$29,450 00	
New York State stock, 5 per cent.	2,500 00	
do do 6 do	33,000 00	
United States stock, 6 do	6,000 00	
		70,950 00
Circulation.....		69,145 00

103. GENESEE VALLEY BANK, GENESEO, (CAPITAL, \$150,000.)

Bonds and mortgages	\$61,960 00	
New York State stock, 5 per cent.	13,900 00	
do do 6 do	17,000 00	
United States stock, 5 do	26,000 00	
do do 6 do	8,000 00	
		126,860 00
Circulation.....		117,037 00

104. GENESEE, BANK OF, BATAVIA, (CAPITAL, \$150,000.)

Bonds and mortgages	\$52,150 00	
New York State stock, 6 per cent.	50,000 00	
United States stock, 5 do	10,000 00	
		112,150 00
Circulation.....		111,231 00

105. GENEVA, BANK OF, GENEVA, (CAPITAL, \$205,000.)

Bonds and mortgages	\$63,790 00	
New York State stock, 4½ per cent.	1,000 00	
do do 5 do	9,000 00	
do do 6 do	57,100 00	
United States stock, 5 do	10,000 00	
do do 6 do	80,000 00	
		170,890 00
Circulation.....		168,760 00

106. GEO. WASHINGTON BANK, CORNING, (CAPITAL, \$20,000.)

Bonds and mortgages	\$12,500 00	
New York State stock, 5 per cent.	8,000 00	
United States stock, 6 do	8,000 00	
		28,500 00
Circulation.....		20,002 00

107. GLENS FALLS BANK, GLENS FALLS, (CAPITAL, \$112,000.)

Bonds and mortgages	\$42,686 00	
New York State stock, 5 per cent.	54,000 00	
do do 5½ do	8,000 00	
do do 6 do	25,000 00	
		\$129,686 00
Circulation.....		116,286 00

108. GOSHEN BANK, GOSHEN, (CAPITAL, \$116,000.)

New York State stock, 5 per cent.	\$40,381 00	
do do 5½ do	5,000 00	
do do 6 do	33,000 00	
United States stock, 5 do	10,000 00	
do do 6 do	15,000 00	
		103,281 00
Circulation.....		97,621 00

109. GREENWICH BANK OF THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$200,000.)

New York State stock, 5 per cent.	\$5,000 00	
d do 5½ do	10,000 00	
do do 6 do	118,500 00	
do do 7 do	20,000 00	
United States stock, 5 do	20,000 00	
do do 6 do	14,000 00	
		185,500 00
Circulation.....		183,420 00

110. GROCERS' BANK IN THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$300,000.)

New York State stock, 5 per cent.	\$5,000 00	
do do 6 do	27,250 00	
United States stock, 5 do	30,000 00	
		62,250 00
Circulation.....		59,350 00

111. HAMILTON BANK, HAMILTON, (CAPITAL, \$116,000.)

Bonds and mortgages	\$45,070 00	
New York State stock, 5 per cent.	20,000 00	
do do 6 do	24,000 00	
		99,070 00
Circulation.....		92,297 00

112. HAMPTON BANK, NORTH CASTLE, (CAPITAL, \$100,000.)

New York State stock, 5½ per cent.	\$4,000 00	
do do 6 do	66,200 00	
United States do 6 do	50,000 00	
		120,200 00
Circulation.....		109,611 00

113. HANOVER BANK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 5 per cent.	\$12,005 00	
do do 6 do	58,000 00	
United States stock, 5 do	75,000 00	
		\$145,005 00
Circulation.....		113,000 00

114. HAVANA, BANK OF, HAVANA, (CAPITAL, \$50,000.)

Bonds and mortgages	\$21,591 00	
New York State stock, 5 per cent.	6,000 00	
do do 6 do	10,000 00	
United States stock, 5 do	10,000 00	
		47,591 00
Circulation.....		46,407 00

115. H. G. HOTCHKISS AND COMPANY'S BANK, LYONS,
(CAPITAL, \$11,320.)

Bonds and mortgages	\$920 00	
New York State stock, 6 per cent.	10,000 00	
		10,920 00
Circulation.....		10,920 00

116. H. J. MESSENGER'S BANK, CORTLAND, (CAPITAL, \$50,000.)

New York State stock, 6 per cent.	\$29,900 00	
United States stock, 5 do	21,000 00	
		50,900 00
Circulation.....		49,499 00

117. H. J. MINER AND COMPANY'S BANK, DUNKIRK,
(CAPITAL, \$30,000.)

Bonds and mortgages	\$35,166 00	
New York State stock, 5 per cent.	6,000 00	
do do 6 do	30,000 00	
do do 7 do	5,000 00	
		76,166 00
Circulation.....		75,614 00

118. HUDSON RIVER BANK, HUDSON, (CAPITAL, \$250,000.)

New York State stock, 5 per cent.	\$9,000 00	
do do 6 do	59,500 00	
United States stock, 5 do	24,000 00	
		92,500 00
Circulation.....		89,569 00

119. HUGUENOT BANK OF NEW PALTZ, NEW PALTZ,
(CAPITAL, \$125,000.)

Bonds and mortgages	\$32,105 00	
New York State stock, 5 per cent.	25,000 00	
United States stock, 6 do	25,000 00	
		82,105 00
Circulation.....		77,390 00

120. HUNGERFORD'S BANK, ADAMS, (CAPITAL, \$125,000.)

Bonds and mortgages	\$43,550 00	
New York State stock, 5 per cent.	42,000 00	
		\$85,550 00
Circulation.....		73,828 00

121. ILION BANK, ILION, (CAPITAL, \$100,000.)

Bonds and mortgages.....	\$19,000 00	
New York State stock, 5 per cent.	19,500 00	
do do 6 do	12,000 00	
		50,500 00
Circulation.....		48,757 00

122. IMPORTERS' AND TRADERS' BANK, NEW YORK,
(CAPITAL, \$1,500,000.)

New York State stock, 5 per cent.	\$50,000 00	
do do 6 do	165,000 00	
		215,000 00
Circulation.....		209,998 00

123. INTERNATIONAL BANK, BUFFALO, (CAPITAL, \$400,000.)

Bonds and mortgages	\$25,409 00	
New York State stock, 6 per cent.	25,000 00	
		50,409 00
Circulation.....		49,998 00

124. IRON BANK, PLATTSBURGH, (CAPITAL, \$50,000.)

Bonds and mortgages	\$14,000 00	
New York State stock, 5 per cent.	20,000 00	
do do 6 do	25,000 00	
		59,000 00
Circulation.....		50,223 00

125. IRVING BANK IN THE CITY OF NEW YORK, NEW YORK,
(CAPITAL, \$500,000.)

New York State stock, 5 per cent.	\$52,000 00	
do do 6 do	31,500 00	
United States stock, 5 do	57,000 00	
do do 6 do	10,000 00	
		150,500 00
Circulation.....		136,061 00

126. JAMESTOWN BANK, JAMESTOWN, (CAPITAL, \$80,910.)

Bonds and mortgages	\$42,575 00	
New York State stock, 5 per cent.	18,500 00	
do do 6 do	36,600 00	
do do 7 do	4,000 00	
United States stock, 6 do	200 00	
		96,875 00
Circulation.....		95,865 00

127. JEFFERSON COUNTY BANK, WATERTOWN, (CAP'L, \$200,000.)

Bonds and mortgages.....	\$55,734 00	
New York State stock, 5 per cent.....	15,000 00	
do do 6 do	50,000 00	
		\$120,734 00
Circulation		119,484 00

128. J. N. HUNGERFORD'S BANK, CORNING, (CAPITAL, \$30,000.)

Bonds and mortgages	\$14,400 00	
New York State stock, 6 per cent.....	15,000 00	
		29,400 00
Circulation		29,166 00

129. J. T. RAPLEE'S BANK, PENN YAN, (CAPITAL, \$25,000.)

Bonds and mortgages	\$15,600 00	
New York State stock, 5 per cent.....	11,500 00	
do do 6 do	5,000 00	
		32,100 00
Circulation		27,912 00

130. JUDSON BANK, OGDENSBURGH, (CAPITAL, \$122,000.)

Bonds and mortgages	\$45,343 00	
New York State stock, 4½ per cent.....	2,000 00	
do do 5 do	25,000 00	
do do 5½ do	1,000 00	
do do 6 do	11,000 00	
do do 7 do	5,000 00	
United States stock, 6 do	2,000 00	
		91,343 00
Circulation.....		90,000 00

131. KENT, BANK OF, LUDINGTONVILLE, (CAPITAL, \$111,940.)

Bonds and mortgages	\$51,100 00	
New York State stock, 5 per cent.....	20,000 00	
do do 6 do	27,000 00	
		98,100 00
Circulation.....		90,399 00

132. KINDERHOOK, BANK OF, KINDERHOOK, (CAPITAL, \$250,000.)

Bonds and mortgages.....	\$38,664 00	
New York State stock, 5 per cent.....	47,000 00	
United States stock, 5 do	15,000 00	
do do 6 do	15,000 00	
		115,664 00
Circulation.....		109,154 00

133. LAKE ONTARIO BANK, OSWEGO, (CAPITAL, \$325,000.)

Bonds and mortgages.....	\$27,560 00	
New York State stock, 5 per cent.....	30,000 00	
do do 6 do	5,000 00	
United States stock, 5 do	7,000 00	
		69,560 00
Circulation.....		66,541 00

134. LAKE SHORE BANK, DUNKIRK, (CAPITAL, \$45,000.)

Bonds and mortgages.....	\$22,700 00	
New York State stock, 5 per cent.....	12,000 00	
do do 6 do	5,500 00	
do do 7 do	5,000 00	
		45,200 00
Circulation.....		43,315 00

135. LANSINGBURGH, BANK OF, LANSINGBURGH,
(CAPITAL, \$150,000.)

Bonds and mortgages.....	\$20,000 00	
New York State stock, 6 per cent.....	25,000 00	
		45,000 00
Circulation.....		42,000 00

136. LEONARDSVILLE BANK, LEONARDSVILLE,
(CAPITAL, \$100,000.)

Bonds and mortgages.....	\$31,310 00	
New York State stock, 5 per cent.....	15,800 00	
do do 6 do	13,500 00	
United States stock, 6 do	10,000 00	
		70,610 00
Circulation.....		63,961 00

137. LIMA, BANK OF, LIMA, (CAPITAL, \$50,000.)

Bonds and mortgages.....	\$26,235 00	
New York State stock, 5 per cent.....	16,000 00	
United States stock, 5 do	11,000 00	
do do 6 do	5,000 00	
		58,235 00
Circulation		54,922 00

138. LOCKPORT CITY BANK, LOCKPORT, (CAPITAL, \$104,000.)

Bonds and mortgages.....	\$27,603 00	
New York State stock, 5 per cent.....	12,000 00	
do do 6 do	29,300 00	
United States stock, 6 do	5,000 00	
		73,903 00
Circulation		72,940 00

145. MANUFACTURERS' AND MERCHANTS' BANK, NEW YORK,
(CAPITAL, \$500,000.)

New York State stock, 5 per cent.....	\$85,000 00	
do do 5½ do	1,000 00	
do do 6 do	2,900 00	
United States stock, 5 do	79,000 00	
		\$167,900 00
Circulation		150,950 00

146. MANUFACTURERS' AND TRADERS' BANK, BUFFALO,
(CAPITAL, \$500,000.)

Bonds and mortgages.....	\$36,324 00	
New York State stock, 5 per cent.....	81,500 00	
do do 6 do	30,000 00	
		97,824 00
Circulation		94,500 00

147. MARINE BANK OF BUFFALO, BUFFALO, (CAPITAL, \$200,000.)

Bonds and mortgages	\$33,600 00	
New York State stock, 5 per cent.....	39,200 00	
		72,800 00
Circulation		70,448 00

148. MARINE BANK OF THE CITY OF NEW YORK, NEW YORK,
(CAPITAL, \$399,000.)

New York State stock, 5 per cent.....	\$51,000 00	
do do 6 do	60,000 00	
United States stock, 5 do	50,000 00	
do do 6 do	30,000 00	
		191,000 00
Circulation		177,170 00

149. MARINE BANK AT OSWEGO, OSWEGO, (CAPITAL, \$185,000.)

Bonds and mortgages.....	\$14,500 00	
New York State stock, 6 per cent:	30,000 00	
		44,500 00
Circulation.. ..		44,043 00

150. MARKET BANK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 5 per cent.....	\$69,000 00	
do do 5½ do	10,000 00	
do do 6 do	66,000 00	
do do 7 do	20,000 00	
United States stock, 5 do	60,000 00	
do do 6 do	17,000 00	
		242,000 00
Circulation		230,203 00

151. MARKET BANK OF TROY, TROY, (CAPITAL, \$204,000.)

Bonds and mortgages.....	\$35,994 00	
New York State stock, 6 per cent.	40,000 00	
		\$75,994 00
Circulation		74,700 00

152. MECHANICS' BANKING ASSOCIATION, NEW YORK,
(CAPITAL, \$500,000.)

New York State stock, 5 per cent.	\$37,000 00	
do do 6 do	19,600 00	
United States stock 5 do	50,000 00	
do do 6 do	1,000 00	
		107,600 00
Circulation.....		99,116 00

153. MECHANICS' AND FARMERS' BANK OF ALBANY, ALBANY,
(CAPITAL, \$350,000.)

Bonds and mortgages.....	\$61,536 97	
New York State stock, 6 per cent.	150,000 00	
		211,536 97
Circulation.....		210,895 00

154. MECHANICS' BANK, BROOKLYN, (CAPITAL, \$500,000.)

New York State stock, 4½ per cent.	\$2,000 00	
do do 5 do	25,000 00	
do do 6 do	98,900 00	
do do 7 do	25,000 00	
United States stock, 5 do	50,000 00	
		200,900 00
Circulation		194,799 00

155. MECHANICS' BANK OF THE CITY OF NEW YORK, NEW
YORK, (CAPITAL, \$2,000,000.)

New York State stock, 4½ per cent.	\$2,000 00	
do do 5 do	204,500 00	
do do 6 do	88,500 00	
United States stock, 6 do	100,000 00	
		395,000 00
Circulation		338,423 00

156. MECHANICS' BANK OF SYRACUSE, SYRACUSE,
(CAPITAL, \$140,000.)

Bonds and mortgages	\$46,530 00	
New York State stock, 5½ per cent.	30,000 00	
United States stock, 6 do	10,000 00	
		86,530 00
Circulation.....		73,695 00

157. MECHANICS' AND TRADERS' BANK, NEW YORK,
(CAPITAL, \$600,000.)

New York State stock, 5 per cent.	\$65,000 00	
do do 6 do	40,000 00	
do do 7 do	20,000 00	
United States stock, 5 do	55,000 00	
do do 6 do	13,500 00	
		\$193,500 00
Circulation.....		184,164 00

158. MERCANTILE BANK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 5 per cent.	\$40,000 00	
		40,000 00
Circulation.....		33,966 00

159. MERCANTILE BANK OF PLATTSBURGH, PLATTSBURGH,
(CAPITAL, \$100,000.)

New York State stock, 5 per cent.	\$81,000 00	
do do 7 do	8,000 00	
United States stock, 6 do	5,000 00	
		94,000 00
Circulation.....		75,000 00

160. MERCHANTS' BANK OF ALBANY, ALBANY, (CAP'L, \$400,000.)

New York State stock, 4½ per cent.	\$5,000 00	
do do 5 do	34,500 00	
do do 6 do	32,000 00	
		71,500 00
Circulation		68,500 00

161. MERCHANTS' BANK OF ERIE COUNTY, LANCASTER,
(CAPITAL, \$50,000.)

Bonds and mortgages.....	\$4,500 00	
New York State stock, 5 per cent.	9,500 00	
do do 6 do	6,000 00	
		20,000 00
Circulation		17,235 00

162. MERCHANTS' BANK IN THE CITY OF NEW YORK, NEW
YORK, (CAPITAL, \$2,776,400.)

New York State stock, 5 per cent.	\$50,000 00	
do do 6 do	99,000 00	
United States stock, 5 do	101,000 00	
		250,000 00
Circulation.....		237,780 00

163. MERCHANTS' BANK IN POUGHKEEPSIE, POUGHKEEPSIE,
(CAPITAL, \$150,000.)

New York State stock, 6 per cent.	\$60,000 00	
United States stock, 6 do	35,000 00	
		95,000 00
Circulation		88,000 00

164. MERCHANTS' BANK, SYRACUSE, (CAPITAL, \$180,000.)

Bonds and mortgages	\$31,550 00	
New York State stock, 5 per cent.	5,000 00	
do do 5½ do	40,000 00	
do do 6 do	500 00	
United States stock, 6 do	20,000 00	
		\$97,050 00
Circulation.....		93,947 00

165. MERCHANTS' BANK OF WESTFIELD, WESTFIELD,
(CAPITAL, \$40,000.)

Bonds and mortgages	\$22,040 00	
New York State stock, 5 per cent.	25,000 00	
		47,040 00
Circulation.....		44,995 00

166. MERCHANTS' EXCHANGE BANK IN THE CITY OF NEW
YORK, NEW YORK, (CAPITAL, \$1,235,000.)

New York State stock, 6 per cent.	\$137,000 00	
		137,000 00
Circulation.....		137,000 00

167. MERCHANTS' AND FARMERS' BANK, ITHACA,
(CAPITAL, \$90,000.)

Bonds and mortgages.....	\$45,978 00	
New York State stock, 6 per cent.	22,000 00	
United States stock, 5 do	5,000 00	
Michigan State stock, 6 do	21,000 00	
		93,978 00
Circulation.....		87,746 00

168. MERCHANTS' AND MECHANICS' BANK OF TROY, TROY,
(CAPITAL, \$300,000.)

Bonds and mortgages	\$41,620 00	
New York State stock, 5 per cent.	29,600 00	
do do 6 do	4,000 00	
United States stock, 5 do	26,000 00	
do do 6 do	7,000 00	
		108,220 00
Circulation.....		104,178 00

169. METROPOLITAN BANK, NEW YORK, (CAPITAL, \$4,000,000.)

New York State stock, 5 per cent.	\$200,000 00	
do do 6 do	100,000 00	
		300,000 00
Circulation.....		284,000 00

170. MIDDLETOWN BANK, MIDDLETOWN, (CAPITAL, \$125,000.)			
Bonds and mortgages		\$38,000 00	
New York State stock, 5 per cent.		30,000 00	
do do 5½ do		5,000 00	
do do 6 do		10,000 00	
United States stock, 5 do		22,000 00	
do do 6 do		1,500 00	
Illinois State do 6 do		7,000 00	
			\$104,100 00
Circulation			98,203 00

171. MOHAWK BANK OF SCHENECTADY, SCHENECTADY, (CAPITAL, \$100,000.)			
New York State stock, 6 per cent.		\$90,000 00	
United States stock, 5 do		10,000 00	
			100,000 00
Circulation			98,907 00

172. MOHAWK RIVER BANK, FORTA, (CAPITAL, \$100,000.)			
New York State stock, 5 per cent.		\$26,100 00	
do do 6 do		50,000 00	
			76,100 00
Circulation			73,862 00

173. MOHAWK VALLEY BANK, MOHAWK, (CAPITAL, \$150,000.)			
Bonds and mortgages		\$39,344 00	
New York State stock, 4½ per cent.		4,000 00	
do do 5 do		9,200 00	
do do 6 do		11,000 00	
United States stock, 5 do		15,000 00	
do do 6 do		9,000 00	
			87,544 00
Circulation			84,880 00

174. MONROE COUNTY BANK, ROCHESTER, (CAPITAL, \$100,000.)			
Bonds and mortgages		\$50,507 00	
New York State stock, 5 per cent.		51,000 00	
United States do 5 do		5,000 00	
			106,507 00
Circulation			100,486 00

175. MONTGOMERY COUNTY BANK, JOHNSTOWN, (CAPITAL, \$100,000.)			
Bonds and mortgages		\$1,000 00	
New York State stock, 6 per cent.		19,000 00	
United States stock 5 do		15,000 00	
			35,000 00
Circulation			33,600 00

175. MUTUAL BANK, TROY, (CAPITAL, \$224,500.)

Bonds and mortgages	\$35,200 00	
New York State stock, 5 per cent.	5,000 00	
do do 6 do	45,000 00	
		\$85,200 00
Circulation		74,000 00

177. NASSAU BANK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 5 per cent.	\$53,000 00	
do do 6 do	67,500 00	
do do 7 do	37,000 00	
		157,500 00
Circulation		155 000 00

178. NASSAU BANK OF BROOKLYN, BROOKLYN, (CAP'L, \$500,000.)

New York State stock, 5 per cent.	\$12,000 00	
do do 6 do	57,000 00	
United States stock, 5 do	75,000 00	
		144,000 00
Circulation		130,380 00

179. NATIONAL BANK IN THE CITY OF NEW YORK, NEW YORK,
(CAPITAL, \$1,500,000.)

New York State stock, 5 per cent.	\$89,000 00	
United States stock, 5 do	100,000 00	
		189,000 00
Circulation		178,500 00

180. NEWARK, BANK OF, NEWARK, (CAPITAL, \$100,000.)

Bonds and mortgages	\$19,620 00	
New York State stock, 5 per cent.	21,000 00	
do do 6 do	7,000 00	
United States stock, 5 do	11,000 00	
		58,620 00
Circulation		56,650 00

181. NEWBURGH, BANK OF, NEWBURGH, (CAPITAL, \$300,000.)

Bonds and mortgages	\$76,387 00	
New York State stock, 5 per cent.	63,000 00	
do do 6 do	38,900 00	
do do 7 do	20,000 00	
United States stock, 6 do	20,000 00	
		218,287 00
Circulation		211,847 00

182. NEWPORT, BANK OF, NEWPORT, (CAPITAL, \$25,125.)

Bonds and mortgages	\$5,000 00	
New York State stock, 6 per cent.	20,000 00	
United States stock 6 do	5,000 00	
		30,000 00
Circulation		29,455 00

183. NEW YORK, BANK OF, NEW YORK, (CAPITAL, \$3,000,000.)			
New York State stock, 5 per cent.	\$295,000 00		
do do 6 do	185,600 00		
			\$480,600 00
Circulation.....			462,305 00
184. NEW YORK COUNTY BANK, NEW YORK, (CAPITAL, \$200,000.)			
New York State stock, 6 per cent.	\$88,000 00		
			88,000 00
Circulation.....			87,974 00
185. NEW YORK AND ERIE BANK, BUFFALO, (CAP'L, \$300,000.)			
Bonds and mortgages	\$17,400 00		
New York State stock, 6 per cent.	25,200 00		
			42,600 00
Circulation.....			42,442 00
186. NEW YORK EXCHANGE BANK IN THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$150,000.)			
New York State stock, 4½ per cent.	\$2,000 00		
do do 5 do	40,500 00		
do do 5½ do	3,000 00		
do do 6 do	9,200 00		
United States stock, 5 do	44,000 00		
do do 6 do	5,000 00		
			103,700 00
Circulation.....			96,208 00
187. NEW YORK STATE BANK, ALBANY, (CAPITAL, \$350,000.)			
New York State stock, 5 per cent.	\$45,500 00		
United States stock, 5 do	42,000 00		
			87,500 00
Circulation.....			80,000 00
188. NIAGARA COUNTY BANK, LOCKPORT, (CAPITAL, \$100,000.)			
Bonds and mortgages	\$11,594 00		
New York State stock, 5 per cent.	16,000 00		
do do 6 do	10,000 00		
United States stock, 6 do	16,000 00		
			53,594 00
Circulation.....			50,714 00
189. NORTH AMERICA, BANK OF, NEW YORK, (CAP'L, \$7,000,000.)			
New York State stock, 5 per cent.	\$38,000 00		
do do 6 do	60,000 00		
do do 7 do	10,000 00		
United States stock, 6 do	15,000 00		
			118,000 00
Circulation.....			104,580 00

190. NORTH RIVER BANK IN THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$400,000.)

New York State stock, 5 per cent.	\$35,600 00	
do do 6 do	20,000 00	
United States stock, 5 do	30,000 00	
		\$85,600 00
Circulation.....		83,000 00

191. NORWICH, BANK OF, NORWICH, (CAPITAL, \$125,000.)

Bonds and mortgages	\$62,882 00	
New York State stock, 6 per cent.	50,000 00	
United States stock, 5 do	20,000 00	
		132,882 00
Circulation.....		131,382 00

192. OCEAN BANK OF THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 5 per cent.	\$24,400 00	
do do 6 do	100,100 00	
		124,500 00
Circulation.....		120,872 00

193. OLD SARATOGA, BANK OF, SCHUYLERVILLE, (CAPITAL, \$110,000.)

Bonds and mortgages	\$30,000 00	
New York State stock, 6 per cent.	30,000 00	
		60,000 00
Circulation.....		60,000 00

194. ONEIDA CENTRAL BANK, ROME, (CAPITAL, \$100,350.)

Bonds and mortgages	\$26,360 00	
New York State stock, 4½ per cent.	9,000 00	
do do 5 do	19,000 00	
United States stock, 5 do	5,000 00	
		59,360 00
Circulation.....		55,239 00

195. ONEIDA COUNTY BANK, UTICA, (CAPITAL, \$125,000.)

Bonds and mortgages.....	\$43,226 00	
New York State stock, 5 per cent.	15,000 00	
do do 6 do	25,000 00	
United States stock, 5 do	6,000 00	
do do 6 do	7,000 00	
		96,226 00
Circulation		94,732 00

196. ONEIDA VALLEY BANK, ONEIDA, (CAPITAL, \$105,000.)				
Bonds and mortgages.....	\$20,790	00		
New York State stock, 5 per cent.....	48,100	00		
do do 6 do	21,400	00		
			<u>\$90,290</u>	00
Circulation			84,140	00
197. ORANGETOWN, BANK OF, ORANGEBURG, (CAPITAL, \$30,000.)				
New York State stock, 6 per cent.....	\$21,000	00		
do do 7 do	29,000	00		
United States stock, 6 do	25,000	00		
			<u>75,000</u>	00
Circulation			72 486	00
198. ORIENTAL BANK, NEW YORK, (CAPITAL, \$300,000.)				
New York State stock, 5 per cent.....	\$45,000	00		
do do 6 do	55,000	00		
United States stock, 5 do	5,000	00		
do do 6 do	9,600	00		
			<u>114,600</u>	00
Circulation			109,861	00
199. ORLEANS COUNTY BANK, ALBION, (CAPITAL, \$71,200.)				
Bonds and mortgages.....	\$8,400	00		
New York State stock, 6 per cent.....	55,000	00		
United States stock, 6 do	5,000	00		
			<u>68,400</u>	00
Circulation.....			67,890	00
200. OSWEGATCHIE BANK, OGDENSBURGH, (CAPITAL, \$200,000.)				
Bonds and mortgages.....	\$44,028	00		
New York State stock, 5 per cent.	5,000	00		
do do 6 do	55,000	00		
			<u>104,028</u>	00
Circulation.....			103,626	00
201. OSWEGO RIVER BANK, FULTON, (CAPITAL, \$114,500.)				
Bonds and mortgages	\$30,080	00		
New York State stock, 5 per cent.	30,000	00		
			<u>60,080</u>	00
Circulation.....			54,000	00
202. OTSEGO COUNTY BANK, COOPERSTOWN, (CAPITAL, \$200,000.)				
Bonds and mortgages.....	\$61,229	00		
New York State stock, 5 per cent.....	30,000	00		
do do 6 do	43,000	00		
			<u>134,229</u>	00
Circulation.....			181,629	00

203. PACIFIC BANK, NEW YORK, (CAPITAL, \$422,700.)

New York State stock, 6 per cent.	\$138,116 00	
United States stock, 6 do	50,000 00	
		\$188,116 00
Circulation.....		184,006 00

204. PARK BANK, NEW YORK, (CAPITAL, \$2,000,000.)

New York State stock, 6 per cent.	\$200,000 00	
United States stock, 6 do	110,000 00	
		310,000 00
Circulation.....		299,000 00

205. PAWLING, BANK OF, PAWLING, (CAPITAL, \$175,000.)

Bonds and mortgages	\$55,340 00	
New York State stock, 5 per cent.	30,000 00	
do do 6 do	32,500 00	
United States stock, 5 do	5,000 00	
		122,840 00
Circulation.....		120,240 00

206. PEOPLE'S BANK OF THE CITY OF NEW YORK, NEW YORK,
(CAPITAL, \$412,500.)

Bonds and mortgages.....	\$31,620 00	
New York State stock, 6 per cent.	79,000 00	
		110,620 00
Circulation.....		108,289 00

207. FERRIN BANK, ROCHESTER, (CAPITAL, \$40,420.)

Bonds and mortgages	\$18,420 00	
New York State stock, 6 per cent.	22,000 00	
		40,420 00
Circulation		40,275 00

208. PHENIX BANK OF THE CITY OF NEW YORK, NEW YORK,
(CAPITAL, \$1,800,000.)

New York State stock, 5 per cent.	\$42,000 00	
do do 6 do	62,500 00	
United States stock, 6 do	100,000 00	
		204,500 00
Circulation.....		175,030 00

209. POUGHKEEPSIE, BANK OF, POUGHKEEPSIE,
(CAPITAL, \$250,000.)

New York State stock, 6 per cent.	\$114,200 00	
		114,200 00
Circulation.....		114,200 00

210. PORT JERVIS, BANK OF, PORT JERVIS, (CAPITAL, \$100,000.)

New York State stock, 5 per cent.	\$8,500 00	
do do 6 do	92,400 00	
		100,900 00
Circulation.....		100,134 00

211. P. R. WESTFALL'S BANK, LYONS, (CAPITAL, \$25,000.)

Bonds and mortgages	\$13,424 00	
New York State stock, 6 per cent.	20,000 00	
United States stock, 6 do	5,000 00	
		\$38,424 00
Circulation.....		38,134 00

212. PULASKI BANK, PULASKI, (CLOSING, CAPITAL, \$35,000.)

Bonds and mortgages	\$14,600 00	
New York State stock, 6 per cent.	10,000 00	
		24,600 00
Circulation.....		18,000 00

213. QUASSAICK BANK, NEWBURGH, (CAPITAL, \$300,000.)

New York State stock, 5 per cent.	\$25,000 00	
do do 6 do	74,000 00	
United States stock, 5 do	10,000 00	
		109,000 00
Circulation.....		105,730 00

214. RANDALL BANK, CORTLAND VILLAGE, (CAPITAL, \$50,000.)

Bonds and mortgages	\$18,800 00	
New York State stock, 5 per cent.	31,000 00	
do do 6 do	3,000 00	
United States stock, 5 do	5,000 00	
		57,800 00
Circulation.....		53,199 00

215. RENSSELAER COUNTY BANK, LANSINGBURGH,
(CAPITAL, \$200,000.)

Bonds and mortgages	\$18,805 00	
New York State stock, 5 per cent.	20,000 00	
do do 6 do	15,000 00	
		53,805 00
Circulation.....		51,964 00

216. REPUBLIC, BANK OF THE, NEW YORK, (CAP'L, \$2,000,000.)

New York State stock, 4½ per cent.	\$26,500 00	
do do 5 do	23,500 00	
do do 5½ do	12,000 00	
do do 6 do	116,000 00	
United States stock, 5 do	100,000 00	
		278,000 00
Circulation.....		263,299 00

217. RHINEBECK, BANK OF, RHINEBECK, (CAPITAL, \$125,000.)

New York State stock, 5 per cent.	\$58,000 00	
do do 6 do	31,000 00	
		89,000 00
Circulation.....		84,776 00

218. ROCHESTER BANK, ROCHESTER, (CAPITAL, \$100,400.)

Bonds and mortgages.....	\$23,932 50	
New York State stock, 5 per cent.....	28,500 00	
do do 6 do	20,000 00	
		\$72,432 50
Circulation		69,724 00

**219. ROCHESTER EXCHANGE BANK, ROCHESTER,
(CAPITAL, \$100,000.)**

New York State stock, 6 per cent.....	\$55,000 00	
United States stock, 6 do	50,000 00	
		105,000 00
Circulation		98,000 00

220. ROCKLAND COUNTY BANK, NYACK, (CAPITAL, \$89,900.)

New York State stock, 5 per cent.	\$19,828 00	
do do 6 do	14,500 00	
United States stock 5 do	18,000 00	
do do 6 do	20,000 00	
		67,328 00
Circulation.....		62,425 00

221. ROME EXCHANGE BANK, ROME, (CAPITAL, \$100,000.)

Bonds and mortgages.....	\$39,030 00	
New York State stock, 5 per cent.	20,000 00	
do do 5½ do	2,000 00	
do do 6 do	24,000 00	
United States stock, 5 do	10,000 00	
		95,030 00
Circulation.....		87,000 00

222. RONDOUT, BANK OF, RONDOUT, (CAPITAL, \$200,000.)

New York State stock, 5 per cent.	\$12,000 00	
do do 6 do	125,000 00	
United States stock, 5 do	13,000 00	
		150,000 00
Circulation.....		147,500 00

223. SAINT NICHOLAS BANK, NEW YORK, (CAPITAL, \$750,000.)

New York State stock, 6 per cent.....	\$50,000 00	
United States stock, 6 do	50,000 00	
		100,000 00
Circulation.....		95,000 00

224. SALEM, BANK OF, SALEM, (CAPITAL, \$129,400.)

Bonds and mortgages.....	\$31,656 00	
New York State stock, 5 per cent.	28,200 00	
do do 6 do	10,000 00	
United States stock, 5 do	26,000 00	
		95,856 00
Circulation		85,512 00

225. SALT SPRINGS BANK, SYRACUSE, (CAPITAL, \$200,000.)

Bonds and mortgages	\$38,793 00	
New York State stock, 6 per cent.	80,000 00	
United States stock, 6 do	10,000 00	
		\$78,793 00
Circulation.....		77,253 00

226. SARATOGA COUNTY BANK, WATERFORD, (CAP'L., \$150,000.)

Bonds and mortgages	\$20,300 00	
New York State stock, 6 per cent.	35,000 00	
United States stock, 5 do	10,000 00	
do do 6 do	2,000 00	
		67,300 00
Circulation.....		66,400 00

227. SARATOGA SPRINGS, BANK OF, SARATOGA SPRINGS, (CAPITAL, \$100,000.)

New York State stock, 5 per cent.	\$71,200 00	
		71,200 00
Circulation.....		65,731 00

228. SAUGERTIES BANK, SAUGERTIES, (CAPITAL, \$125,000.)

New York State stock, 5 per cent.	\$51,000 00	
do do 6 do	50,000 00	
		101,000 00
Circulation		96,000 00

229. SCHOHARIE COUNTY BANK, SCHOHARIE, (CAP'L, \$50,000.)

Bonds and mortgages.....	\$38,100 00	
New York State stock, 6 per cent.	39,000 00	
		77,100 00
Circulation.....		77,094 00

230. SENECA FALLS, BANK OF, SENECA FALLS, (CAP'L, \$50,000.)

Bonds and mortgages	\$28,636 00	
New York State stock, 5 per cent.	33,000 00	
do do 6 do	20,300 00	
United States stock, 6 do	5,000 00	
		86,936 00
Circulation		57,500 00

231. SETAUKET BANK, SETAUKET, (CAPITAL, \$100,000.)

New York State stock, 5 per cent.	\$52,272 00	
do do 6 do	21,000 00	
United States stock, 5 do	55,000 00	
		128,272 00
Circulation.....		111,402 00

232. SHOE AND LEATHER BANK, NEW YORK, (CAP'L, \$1,500,000.)

New York State stock, 5 per cent.	\$10,000 00	
do do 6 do	323,000 00	
		\$333,000 00
Circulation.....		331,800 00

233. SILVER CREEK, BANK OF, SILVER CREEK, (CAP'L, \$100,800.)

Bonds and mortgages.....	\$33,575 00	
New York State stock, 5 per cent.....	21,000 00	
Illinois State do 6 do	20,000 00	
		74,575 00
Circulation		64,300 00

234. SMITH'S BANK OF PERRY, PERRY, (CAPITAL, \$35,000.)

New York State stock, 6 per cent.	\$35,000 00	
		35,000 00
Circulation		34,990 00

235. SPRAKER BANK, CANAJOHARIE, (CAPITAL, \$100,000.)

Bonds and mortgages.....	\$18,200 00	
New York State stock, 5 per cent.....	30,000 00	
do do 6 do	24,000 00	
United States stock, 5 do	11,000 00	
		83,200 00
Circulation		72,770 00

236. STATE OF NEW YORK BANK, KINGSTON, (CAP'L, \$125,000.)

New York State stock, 5 per cent.....	\$500 00	
do do 6 do	56,000 00	
United States stock, 5 do	50,000 00	
		106,500 00
Circulation		97,930 00

237. STATE BANK OF TROY, TROY, (CAPITAL, \$250,000.)

Bonds and mortgages.....	\$53,050 00	
New York State stock, 5 per cent.....	21,000 00	
do do 6 do	37,000 00	
United States stock, 5 do	30,000 00	
		141,050 00
Circulation		136,066 00

238. STISSING BANK, PINE PLAINS, (CAPITAL, \$90,000.)

Bonds and mortgages.....	\$19,950 00	
New York State stock, 5 per cent.....	30,000 00	
United States stock, 5 do	7,000 00	
do do 6 do	10,000 00	
		66,950 00
Circulation		60,000 00

239. SUFFOLK COUNTY BANK, SAG HARBOR, (CAPITAL, \$20,000.)

New York State stock, 4½ per cent.....	\$4,250 00	
do do 5 do	32,000 00	
do do 6 do	7,000 00	
United States stock, 5 do	5,000 00	
do do 6 do	21,000 00	
		\$69,250 00
Circulation		65,214 00

240. SUSQUEHANNA VALLEY BANK, BINGHAMTON,
(CAPITAL, \$100,000.)

Bonds and mortgages.....	\$48,660 00	
New York State stock, 4½ per cent.....	3,000 00	
do do 5 do	23,000 00	
do do 6 do	20,000 00	
United States stock, 5 do	2,000 00	
		96,660 00
Circulation.....		89,354 00

241. SYRACUSE, BANK OF, SYRACUSE, (CAPITAL, \$200,000.)

Bonds and mortgages	\$41,658 00	
New York State stock, 5 per cent.....	65,000 00	
		106,658 00
Circulation		101,801 00

242. SYRACUSE CITY BANK, SYRACUSE, (CAPITAL, \$166,700.)

Bonds and mortgages.....	\$16,500 00	
New York State stock, 5 per cent.....	29,000 00	
Cash on deposit	4,800 00	
		50,300 00
Circulation		47,980 00

243. TANNERS' BANK CATSKILL, (CAPITAL, \$150,000.)

New York State stock, 6 per cent.....	\$40,000 00	
do do 7 do	10,000 00	
		50,000 00
Circulation		50,000 00

244. TIOGA, BANK OF, OWEGO, (CAPITAL, \$100,000.)

New York State stock, 5 per cent.....	\$60,000 00	
do do 6 do	25,000 00	
		85,000 00
Circulation		79,027 00

245. TRADESMEN'S BANK OF THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$1,000,000.)

New York State stock, 5 per cent.	\$103,500 00	
do do 6 do	190,000 00	
United States stock, 5 do	25,000 00	
do do 6 do	25,000 00	
		\$343,500 00
Circulation.....		329,100 00

246. TRADERS' BANK OF ROCHESTER, ROCHESTER, (CAPITAL, \$250,000.)

Bonds and mortgages	\$52,039 00	
New York State stock, 5 per cent.	24,000 00	
do do 6 do	46,000 00	
		122,039 00
Circulation.....		119,500 00

247. TROY, BANK OF, TROY, (CAPITAL, \$440,000.)

Bonds and mortgages	\$4,000 00	
New York State stock, 5 per cent.	10,000 00	
do do 6 do	41,000 00	
United States stock, 5 do	25,000 00	
		80,000 00
Circulation.....		63,320 00

248. UNADILLA BANK, UNADILLA, (CAPITAL, \$129,350.)

Bonds and mortgages	\$50,350 00	
New York State stock, 5 per cent.	5,000 00	
do do 6 do	67,000 00	
do do 7 do	2,000 00	
United States stock 5 do	5,000 00	
		129,350 00
Circulation.....		128,500 00

249. ULSTER, BANK OF, SAUGERTIES, (CAPITAL, \$150,000.)

Bonds and mortgages	\$7,500 00	
New York State stock, 5 per cent.	6,000 00	
do do 5½ do	1,000 00	
do do 6 do	49,500 00	
United States do 6 do	44,000 00	
		108,000 00
Circulation.....		93,548 00

250. ULSTER COUNTY BANK, KINGSTON, (CAPITAL, \$150,000.)

New York State stock, 6 per cent.	\$10,000 00	
		10,000 00
Circulation.....		

251. UNION BANK OF ALBANY, ALBANY, (CAPITAL, \$500,000.)				
New York State stock, 5 per cent.....			\$30,000 00	
do do 6 do			50,500 00	
United States stock, 5 do			10,000 00	
				\$90,500 00
Circulation.....				87,391 00
252. UNION BANK OF KINDERHOOK, KINDERHOOK, (CAPITAL, \$200,000.)				
Bonds and mortgages			\$34,819 00	
New York State stock, 5 per cent.			2,500 00	
do do 6 do			60,000 00	
United States stock, 6 do			20,000 00	
				117,319 00
Circulation				109,886 00
253. UNION BANK IN THE CITY OF NEW YORK, NEW YORK, (CAPITAL, \$1,500,000.)				
New York State stock, 5 per cent.....			\$50,000 00	
do do 6 do			150,000 00	
United States stock, 5 do			91,000 00	
do do 6 do			9,000 00	
				300,000 00
Circulation.....				285,000 00
254. UNION BANK OF ROCHESTER, ROCHESTER, (CAPITAL, \$500,000.)				
Bonds and mortgages			\$98,786 00	
New York State stock, 5 per cent.....			60,000 00	
do do 6 do			55,600 00	
United States stock, 5 do			3,000 00	
				217,386 00
Circulation.....				213,400 00
255. UNION BANK OF SULLIVAN COUNTY, MONTICELLO, (CAPITAL, \$150,000.)				
Bonds and mortgages			\$21,704 00	
New York State stock, 5 per cent.....			30,500 00	
do do 6 do			38,500 00	
United States stock, 6 do			15,000 00	
				105,704 00
Circulation				85,799 00
256. UNION BANK OF TROY, TROY, (CAPITAL, \$300,000.)				
Bonds and mortgages.....			\$18,600 00	
New York State stock, 5 per cent.			6,867 00	
do do 5½ do			20,000 00	
do do 6 do			33,965 15	
do do 7 do			7,000 00	
United States stock, 5 do			9,000 00	
do do 6 do			12,000 00	
				107,432 15
Circulation.....				103,872 00

237. UNION BANK OF WATERTOWN, WATERTOWN,
(CAPITAL, \$187,900.)

Bonds and mortgages	\$45,944 00	
New York State stock, 5 per cent.....	30,000 00	
do do 6 do	20,000 00	
		\$95,944 00
Circulation		79,816 00

238. UTICA, BANK OF, UTICA, (CAPITAL, \$600,000.)

Bonds and mortgages.....	\$89,932 00	
New York State stock, 6 per cent.....	102,000 00	
United States stock 5 do	63,000 00	
		254,932 00
Circulation		251,740 00

239. UTICA CITY BANK, UTICA, (CAPITAL, \$200,000.)

Bonds and mortgages.....	\$41,552 00	
New York State stock, 5 per cent.....	14,000 00	
do do 6 do	36,000 00	
		91,552 00
Circulation		90,417 00

240. VERNON, BANK OF, VERNON, (CAPITAL, \$100,000.)

Bonds and mortgages	\$5,400 00	
New York State stock, 5 per cent.....	60,000 00	
United States stock, 5 do	10,000 00	
		75,400 00
Circulation		68,487 00

241. WALLKILL BANK, MIDDLETOWN, (CAPITAL, \$175,000.)

New York State stock, 5 per cent.....	\$57,300 00	
do do 6 do	17,000 00	
United States stock, 5 do	9,000 00	
do do 6 do	17,000 00	
		100,300 00
Circulation		93,401 00

242. WASHINGTON COUNTY BANK, GREENWICH,
(CAPITAL, \$200,000.)

Bonds and mortgages	\$40,004 00	
New York State stock, 5 per cent.....	5,000 00	
do do 6 do	11,000 00	
Illinois State do 6 do	37,500 00	
		93,504 00
Circulation.....		85,339 00

263. WATERTOWN BANK AND LOAN COMPANY, WATERTOWN,
(CAPITAL, \$100,000.)

Bonds and mortgages	\$48,150 00	
New York State stock, 5 per cent.....	25,000 00	
do do 5½ do	11,000 00	
do do 6 do	15,000 00	
		\$99,150 00
Circulation.....		97,240 00

264. WATERTOWN, BANK OF, WATERTOWN, (CAPITAL, \$29,000.)

Bonds and mortgages	\$10,921 00	
New York State stock, 5 per cent.....	6,480 00	
do do 6 do ...	5,000 00	
Illinois State stock, 6 do	1,000 00	
		23,401 00
Circulation		22,572 00

265. WATERVILLE, BANK OF, WATERVILLE, (CAP'L, \$120,000.)

Bonds and mortgages.....	\$51,000 00	
New York State stock, 5 per cent.....	5,000 00	
do do 5 do	25,000 00	
do do 7 do	2,500 00	
United States stock, 5 do	5,000 00	
do do 5 do	5,000 00	
Illinois State stock, 6 do	30,000 00	
		123,500 00
Circulation		112,800 00

266. WAVERLY BANK, WAVERLY, (CAPITAL, \$106,100.)

Bonds and mortgages	\$1,820 00	
New York State stock, 6 per cent.....	80,000 00	
		81,820 00
Circulation.....		81,820 00

267. WEEDSPORT BANK, WEEDSPORT, (CAPITAL, \$100,000.)

Bonds and mortgages	\$22,160 00	
New York State stock, 6 per cent.....	30,000 00	
		52,160 00
Circulation.....		52,160 00

268. WESTFIELD, BANK OF, WESTFIELD, (CAPITAL, \$50,000.)

Bonds and mortgages.....	\$20,363 00	
New York State stock, 5 per cent.....	26,000 00	
		46,363 00
Circulation.....		39,273 00

269. WEST TROY, BANK OF, WEST TROY, (CAPITAL, \$250,000.)

Bonds and mortgages.....	\$14,400 00	
New York State stock, 6 per cent.	47,000 00	
		\$61,400 00
Circulation.....		61,230 00

**270. WEST WINFIELD BANK, WEST WINFIELD,
(CAPITAL, \$125,000.)**

Bonds and mortgages	\$27,486 00	
New York State stock, 6 per cent.	40,000 00	
		67,486 00
Circulation.....		56,859 00

271. WHITE'S BANK OF BUFFALO, BUFFALO, (CAP'L, \$200,000.)

Bonds and mortgages.....	\$37,000 00	
New York State stock, 5 per cent.	40,575 00	
		77,575 00
Circulation		74,604 00

272. WHITEHALL, BANK OF, WHITEHALL, (CAPITAL, \$100,000.)

New York State stock, 6 per cent.	\$40,000 00	
United States do 6 do	10,000 00	
		50,000 00
Circulation.....		41,000 00

273. WHITESTOWN, BANK OF, WHITESTOWN, (CAPITAL, \$120,000.)

Bonds and mortgages	\$33,450 00	
New York State stock, 5 per cent.....	10,000 00	
do do 6 do	10,000 00	
United States stock, 6 do	10,000 00	
		63,450 00
Circulation.....		50,116 00

**274. WILLIAMSBURGH CITY BANK, BROOKLYN,
(CAPITAL, \$500,000.)**

New York State stock, 4½ per cent.....	\$18,000 00	
do do 5 do	121,000 00	
do do 6 do	25,000 00	
United States stock, 5 do	7,000 00	
		171,000 00
Circulation.....		158,690 00

**275. WM. WILLIAM'S BANK OF HASTINGS, HASTINGS UPON
HUDSON, (CAPITAL, \$10,000.)**

New York State stock, 6 per cent.....	\$12,500 00	
Cash on deposit.....	187 50	
		12,687 50
Circulation.....		12,500 00

276. WOOSTER SHERMAN'S BANK, WATERTOWN,
(CAPITAL, \$50,000.)

Bonds and mortgages.....	\$18,476 00	
New York State stock, 6 per cent.	15,000 00	
		\$33,476 00
Circulation		30,000 00

277. WORTHINGTON BANK, COOPERSTOWN, (CAPITAL, \$50,000.)

Bonds and mortgages	\$28,435 00	
New York State stock, 5 per cent.....	1,000 00	
do do 5½ do	1,000 00	
do do 6 do	13,000 00	
do do 7 do	12,000 00	
		55,435 00
Circulation		53,769 00

278. WYOMING COUNTY BANK, WARSAW, (CAPITAL, \$50,000.)

Bonds and mortgages.....	\$30,078 00	
New York State stock, 6 per cent.	30,000 00	
United States stock, 5 do	20,000 00	
		80,078 00
Circulation.....		79,275 00

279. YONKERS, BANK OF, YONKERS, (CAPITAL, \$150,000.)

New York State stock, 6 per cent.	\$80,000 00	
		80,000 00
Circulation		78,451 00

Closing and insolvent banking associations, and individual bankers, with the amount of cash in deposit, and the outstanding circulation of each, September 30th, 1861.

1. AGRICULTURAL BANK OF HERKIMER, HERKIMER.

Cash	\$3,640 61
Circulation	3,071 00

2. BANK OF ALBANY, ALBANY.

Cash	7,770 95
Circulation	6,276 00

3. BANK OF THE CAPITOL, ALBANY.

Cash	10,265 27
Circulation	8,461 00

4. BANK OF HORNELLSVILLE, HORNELLSVILLE.

Cash	1,330 48
Circulation	1,144 00

5. BANK OF THE INTERIOR, ALBANY.

Cash	14,230 00
Circulation	14,230 00

6. BANK OF CORNING, CORNING.

Cash	2,090 00
Circulation	2,090 00

7. BANK OF SING SING, SING SING.

Cash	2,463 00
Circulation	2,463 00

8. BANK OF THE UNION IN THE CITY OF NEW YORK, NEW YORK.

Cash	321 70
Circulation	385 00

9. CENTRAL BANK IN THE CITY OF NEW YORK, NEW YORK.

Cash	544 70
Circulation	608 00

10. CHEMUNG COUNTY BANK, HORSEHEADS.

Cash	1,101 63
Circulation	606 00

11. CATARACT BANK, LOCKPORT.

Cash	6,885 53
Circulation	6,830 00

12. DAIRYMEN'S BANK, NEWPORT.

Cash	2,574 94
Circulation	2,017 00

13. EIGHTH AVENUE BANK, NEW YORK.

Cash	993 25
Circulation	536 00

14. EMPIRE CITY BANK, NEW YORK,

Cash	1,026 00
Circulation	894 00

15. EXCHANGE BANK OF BUFFALO, BUFFALO.		
Cash		\$1,595 00
Circulation		1,595 00
16. EXCHANGE BANK OF GENESEE, BATAVIA.		
Cash		2,505 48
Circulation		2,092 00
17. FARMERS' BANK OF SARATOGA COUNTY, CRESCENT.		
Cash		4,424 21
Circulation		4,368 00
18. HAMILTON EXCHANGE BANK, GREENE.		
Cash		848 75
Circulation		760 00
19. H. J. MINER'S BANK OF UTICA, FREDONIA.		
Cash		1,506 17
Circulation		1,494 00
20. HOLLISTER BANK OF BUFFALO, BUFFALO.		
Cash		3,078 09
Circulation		2,723 00
21. HOLLIS WHITE & COMPANY'S BANK, NIAGARA FALLS.		
Cash		1,020 00
Circulation		1,018 00
22. ISLAND CITY BANK, NEW YORK.		
Cash		1,849 41
Circulation		1,428 00
23. J. W. RUMSEY & COMPANY'S BANK, TARRYTOWN.		
Cash		771 00
Circulation		735 00
24. KNICKERBOCKER BANK, NEW YORK.		
Cash		1,405 50
Circulation		1,406 00
25. LAKE MAHOPAC BANK, MAHOPAC.		
Cash		1,953 77
Circulation		1,809 00
26. LUTHER WRIGHT'S BANK, OSWEGO.		
Cash		5,944 00
Circulation		5,944 00
27. MEDINA BANK, MEDINA.		
Cash		7,751 65
Circulation		7,283 00
28. MONROE BANK OF ROCHESTER, CUBA.		
Cash		2,294 22
Circulation		2,274 00
29. NATIONAL BANK OF ALBANY, ALBANY.		
Cash		8,167 40
Circulation		7,841 00
30. NEW YORK STATE STOCK SECURITY BANK, NEW YORK.		
Cash		27 00
Circulation		27 00

31. NEW YORK TRADERS' BANK, NORTH GRANVILLE.

Cash	\$1,503 00
Circulation	1,503 00

32. OLIVER LEE & COMPANY'S BANK, BUFFALO.

Cash	3,915 27
Circulation	3,901 00

33. ONONDAGA BANK, SYRACUSE.

Cash	902 07
Circulation	896 00

34. ONTARIO COUNTY BANK, PHELPS.

Cash	2,723 11
Circulation	393 00

35. ONTARIO BANK, PRESIDENT, DIRECTORS AND COMPANY OF THE, UTICA.

Cash	73 50
Circulation	44 00

36. PINE PLAINS BANK, PINE PLAINS.

Cash	4,029 80
Circulation	3,532 00

37. POWELL BANK, NEWBURGH.

Cash	3,946 47
Circulation	3,832 00

38. PRATT BANK OF BUFFALO, BUFFALO.

Cash	3,114 10
Circulation	2,389 00

39. PUTNAM VALLEY BANK, PUTNAM VALLEY.

Cash	3,068 19
Circulation	2,897 00

40. R. M. GODDARD & COMPANY'S BANK, CANTON.

Cash	1,730 00
Circulation	1,470 00

41. STATE BANK AT SACKETT'S HARBOR, SACKETT'S HARBOR.

Cash	1,252 31
Circulation	1,151 00

42. STATE BANK AT SAUGERTIES, SAUGERTIES.

Cash	4,302 98
Circulation	3,934 00

43. SUFFOLK BANK, NEW YORK.

Cash	787 71
Circulation	848 00

44. WESTERN BANK OF LOCKPORT, LOCKPORT.

Cash	1,786 48
Circulation	1,562 00

RECAPITULATION.

Bonds and mortgages					\$5,386,802 47
New York State stock, 4½ per cent.				\$133,400 00	
do	do	5	do	6,683,300 00	
do	do	5½	do	175,000 00	
do	do	6	do	11,499,505 92	
do	do	7	do	632,500 00	
					19,123,705 92
United States	do	5	do	\$3,236,000 00	
do	do	6	do	1,853,300 00	
					5,089,300 00
Arkansas State	do	6	do	\$24,000 00	
Illinois	do	6	do	410,250 00	
Michigan	do	6	do	41,000 00	
					475,250 00
Cash in deposit					138,722 20
Total					\$30,213,780 59
Circulation					\$28,360,482 00

The following securities are held for incorporated banks and trust companies, under special acts of the Legislature, viz :

Bank of Orange county, Goshen, (under act of March 12, 1849):	
New York State stock, 5 per cent....	\$3,750 00
do • do 6 do ..	24,400 00
	\$28,150 00
Cayuga County Bank, Auburn, (under act of April 12, 1848):	
New York State stock, 6 per cent.	\$2,000 00
Bank of Genesee, Batavia, (under chap. 370, Laws of 1857):	
Cash	\$9,184 43
Bank of Geneva, Geneva, (under chap. 370, Laws of 1857):	
Cash	\$19,040 10
Bank of Ithaca, Ithaca, (under chap. 370, Laws of 1857):	
Cash	\$7,696 84

TRUST COMPANIES.

Buffalo Trust Company, Buffalo:	
Bonds and mortgages	\$100,000 00
United States Trust Company, New York:	
Auburn city stock, 7 per cent.	\$100,000 00

State of New York.

No. 104.

IN SENATE,

April 15, 1862.

GENERAL ORDERS.

473. (Assembly, No. 320.) An act for the relief of Samuel Donaldson and Hiram Reynolds.
474. (Assembly, No. 390.) An act for the relief of James Oswald and Daniel Van Valkenburgh.
475. (Assembly, No. 325.) An act to authorize a loan to the town of Westfield.
476. (Assembly, No. 431.) An act in relation to the Troy and Cohoes Railroad Company.
477. (Assembly, No. 316.) An act to amend the act entitled "An act to incorporate the village of Cleveland, Oswego county," passed April 15, 1857, and its several amendments to enlarge its powers.
478. (Assembly, No. 262.) An act for the relief of E. Norman Leslie, and to authorize the trustees of the village of Skaneateles to raise one hundred and eighty-eight dollars by tax.
479. (Assembly, No. 377.) An act to amend an act entitled "An act to incorporate a fire company in Union Village, Washington county," passed March 22, 1837.
480. (Assembly, No. 482.) An act to legalize the election held in the village of Avon on the 4th day of March, 1862.
481. (Assembly, No. 436.) An act to amend an act entitled "An act to amend and condense the several acts in relation to the village of Hamilton," passed May 11, 1840, and to amend subdivision 3, of section 3, of chapter 297, of the Laws of 1859.
482. (Assembly, No. 362.) An act to extend the time for the completion of the Lebanon Springs railroad.

State of New York.

No. 105.

IN SENATE,

April 15, 1862.

GENERAL ORDERS.

- 483. (Assembly, No. 476.) An act for the collection of taxes in the towns of Morrisania and West Farms, in the county of Westchester.
- 484. (Assembly, No. 184.) An act authorizing the supervisor of the town of Hempstead to call a special town meeting to determine by ballot whether the public lands of said town (called the Hempstead Plains) shall be sold or not.
- 485. (Assembly, No. 290.) An act to amend an act entitled "An act to provide for the erection of a town hall in the town of Flushing, in the county of Queens," passed March 19, 1861.
- 486. (Assembly, No. 82.) An act to amend an act entitled "An act in relation to jurors and to the appointment and the duties of a commissioner of jurors in the county of Kings," passed April 17, 1858.
- 487. (Assembly, No. 473.) An act to amend the charter of the Guardian Life Insurance Company of New York.
- 488. (Assembly, No. 339.) An act to reduce the number of directors of the Gallatin Fire Insurance Company of the city of New York.
- 489. (Assembly, No. 344.) An act to provide for the payment of Francis Crawford, as a soldier in the first regiment of New York volunteers in the Mexican war.
- 490. (Assembly, No. 402.) An act to provide for the reimbursement of certain persons belonging to the militia of this State, for clothing and equipments lost or destroyed in the service of the United States.

491. (Assembly, No. 464.) An act to protect the harbor of New York against invasion and provide for the public defence.
492. (Assembly, No. 327.) An act to amend the charter of the New York Christian Benevolent Missionary Society, formed under the provisions of an act entitled "An act for the incorporation of benevolent, charitable, scientific and missionary societies," passed March 12, 1848.
493. (Assembly, No. 282.) An act to amend an act entitled "An act to extend the benefits of instruction to the blind, and for other purposes," passed April 18, 1839.
494. (Assembly, No. 396.) An act to repeal an act passed April 14, 1859, in relation to granting certain rights and privileges to the Otsego Lake Turnpike Company.
495. (Assembly, No. 276.) An act to repeal the charter of the Westfield and Chautauqua Lake Plankroad Company.

TRANSACTIONS
OF THE
MEDICAL SOCIETY
OF THE
STATE OF NEW YORK,
FOR THE YEAR 1862.

ALBANY:
CHARLES VAN BENTHUYSEN, PRINTER.
1862.

State of New York.

No. 106.

IN SENATE,

March 13, 1862.

TRANSACTIONS OF THE STATE MEDICAL SOCIETY.

To the President of the Senate :

SIR—We have the honor to transmit to you the Transactions of the Medical Society of the State of New York for the year 1862.

Very respectfully,

Your obedient servants,

THOMAS HUN,
SYLVESTER D. WILLARD,
HOWARD TOWNSEND,

Committee of Publication.

TRANSACTIONS.

“The Essential Dignity of the Profession of Medicine.”

1. The Annual Address before the Medical Society of the State of New York, and the Members of the Legislature, delivered in the Capitol, February 6, 1862, by EDWARD H. PARKER, M. D., President of the Society.

Mr. Secretary and Gentlemen of the Society:

In this place, with these surroundings, I feel quite sure that you will not expect me to dwell upon the technical topics of our profession. Interesting as they may be to us they are not so to those less familiar with them, and certainly you would not desire me to occupy the time assigned me for the performance of this duty in such a manner as to fatigue these friends who to-night honor us with their presence. Neither do I conceal from myself the fact that words uttered in this hall are heard throughout the State, and that my audience is much greater than that which meets the eye.

Yet I cannot ignore those subjects which are the especial objects of this society, and which are the very life of the profession to which we are devoted. We are assembled as medical men, and we here represent the medical men scattered through our State, and our thoughts naturally run in medical channels. I beg you, then, my medical brethren, and you, our unprofessional friends, to listen to me patiently while I shall discourse of “the essential dignity of the profession of medicine.”

These are days characterized by unbelief. Nothing is too thoroughly settled to escape the assaults of doubt, nothing too holy to be spared the attacks of infidelity. It is well therefore to occasionally revisit the ancient landmarks, and to reassure ourselves that they still stand as the fathers left them. It strengthens our faith, it cheers our hearts, it nerves our arms to find that these are secure.

It would be strange indeed if the science of medicine escaped these assaults. Nothing else has; why should that? And yet to assail is a very different thing from conquering. Lilliput may throw a javelin at Brobdingnag, but that does not slay the giant, nor even convict him of weakness.

Two thousand years ago Jesus the son of Sirach said "the skill of the physician shall lift up his head; and in the sight of great men he shall be in admiration." In fact, ever since disease first entered the world it has only been in accordance with human nature that honor should be given to him who has made it his occupation to relieve the ills that flesh is heir to. No matter how much of ignorance may be concealed, how much of accidental good luck there may be in the result, whoever appears to be the agent of the cure is honored, whether man or woman, learned or foolish, monk or layman.

But it is not of such dignity that I would speak. This is what we see burlesqued upon the stage when the doctor enters. We know the long stick held carefully in the hand before the rest of the figure appears; or, if we have any doubt remaining, it is settled by the wig, or positively by the black small clothes. Ah! the days of the long stick with its gold head and civet box are passed, and though we sometimes see its feeble successor, the cane, in the hands of the faculty, even this is passing away. What would the gold headed stick, so pompously carried by Radcliffe, Mead, Askew, Pitcairn and Baillie, and then deposited with the English college of physicians, what would this say could it speak for its degenerate successors? Latin must be its language, and its words "tempora mutantur, et nos mutamur in illis." Or how would the glorious old wigs, so full of learning and of powder, reproach our bald pates; and the small clothes, with the silken stocking fitting over the well turned calf, stuffed if need be, supported by the shoe brilliant with its gorgeous buckle, say to our long and flapping pantaloons with (O tempora, O mores!) our india rubber boots?

No, it is not in these externals that we are to look for the *essential* dignity of the profession of medicine. It is in that which makes it a science, and in that which enables, I had almost said compels its votaries to practice the highest virtues.

If there is any pursuit which has its foundation and all its structure in science, one which requires its devotees to be familiar with science, to be *imbued* with it, certainly it is medicine.

And this I say, knowing that we are often sneered at as mere pill makers, or reproached as butchers ; that we are supposed to delight in pouring unpleasant draughts down the gullets of suffering humanity, and absolutely to revel in human bloodshed.

To you, gentlemen of this society, I do not need to say anything of the falsity of such notions, but it may not be unprofitable for others.

The study of man, his anatomy and his physiology ; the study of plants, their habits, their growth, their influences on man ; the study of the earth and the minerals ; the study of chemistry both organic and inorganic,—these are the sciences with which we first indoctrinate the applicant for medical honors. Neither is it a smattering of these that will suffice. It is knowledge, thorough and familiar knowledge of them that is necessary. The scalpel, the test tube, the microscope must be in turn and constantly before his eye or in his hand ; and when he has grown familiar with them and their uses, then we show him how disease manifests itself—how to detect its hidden signs by microscopic or chemical assistance, how to combat it by the juices of the plants or by the salts of the earth, or as a last resort to remove it by his knife.

Do you think that he can either learn or practice medicine without having to occupy himself with scientific questions? Based in science, established by science, built up in science, how can it be that the art of medicine can be practiced without science?

Here then I assume that dignity must be inherent in such a pursuit. It is something worthy of occupying the mind and all the powers of man.

With this statement I might rest my case, confident of a favorable verdict, but I propose to show that it requires of its disciples the practice of many virtues, and is in most respects second to no other profession.

But, first, let me tell you that one of the distinguishing traits of man is his credulity. It is not possible to tell any story so great, so overdrawn, so absurd, that it will not have earnest believers, provided only that a moderate degree of attention be given to the way in which it is brought forward. It is impossible to make any claims to unusual or supernatural powers, however much they may be at variance with all the laws of matter and of mind, or however much they may encroach upon the pre-

rogatives of God, without finding that crowds are ready and willing to admit and support those claims with all the enthusiasm of new converts and with all the eagerness of fanatics. A Baron Munchausen always finds believers while living, and not unfrequently when dead.

Do you remember how a few years since Miller set himself up for a prophet foreseeing the near approach of the end of the world, and what multitudes believed him and prepared for it in their way, standing ready for it at the appointed hour in their white cotton robes, expecting, and not doubting, that in the next moment they should witness the crash of the universe? Or can you forget that amid our western mountains and about the Salt Lake, thousands are gathered who have reached that region after months of wearisome and perilous journeyings, sufficient to damp any ardor but that of fanaticism, and all because they have believed the wild vagaries and absurd claims of Joe Smith and of his more gross and licentious successor? Or can you tell me how many persons are to-night listening to the vapid messages purporting to come from the spirit world, swallowing every word as if its truth were unquestionable, or rested on some foundation better than inspiration itself? I have no doubt that if Herrman, the famous prestidigitator, should boldly affirm that he actually takes rabbits from one's coat collar, and dozens of eggs out of one's ears, six weeks would be long enough for collecting crowds of admiring believers, who in as many months would prove with all the rigorous demonstration of geometry, to their own satisfaction, that coat collars are always full of embryo rabbits, and that the external passage of the human ear is especially adapted to, in fact to complete its functions required, that hens' eggs should frequently pass out of it.

The victims of such delusions are by no means the poor and ignorant exclusively. The wealthy and the cultivated are always represented among them by their full proportion of silly men as well as silly women. In fact the necessity of labor to the poor saves them from many of these dangers which encompass the idle rich. These spend their hours with the volumes of the spasmodic poets till they come to think they understand even Mrs. Browning's lucubrations and therefore all things under the sun; those invigorated by their necessary toil find little to enjoy in such transcendent nothingness, and by their very lot, at which they so often repine, are defended from fearful perils.

But I seem to hear some one ask, What has this to do with the dignity of the profession of medicine? And I answer, very much. Charlatans have always affected it, and have found that road to notoriety the shortest which appears to pass by the temple of Esculapius. Tomes might be filled before the history of medical charlatanism would be complete. Indeed it would be, to quote the words of another, "the history of the human race in all ages and climes," but a history how full of sad illustrations of the credulity, the weakness and the sorrows of our common humanity.

I confess I have little desire to trace it through its every shameful course. It is about us to-day as it always has been, barefaced, impudent, successful, haggling for its rewards like a shameless harlot, and like her often filling its house with the sweetest odors, and adorning its chambers with most exquisite art.

Shall I describe the charlatan to you?

"My name is Pulsefeel, a poor Doctor of Physic,
That does wear three-pile velvet in his hat,
Has paid a quarter's rent of his house beforehand,
And (simple as he stands here) was made Doctor beyond sea.
I vow, as I am right worshipful, the taking
Of my degree cost me twelve French Crowns, and
Thirty-five pounds of butter in Upper Germany.
I can make your beauty, and preserve it,
Rectify your body and maintaine it,
Clarify your blood, surfe your cheeks, perfume
Your skin, tinct your hair, enliven your eye,
Heighten your appetite; and as for jellies,
Dentifrices, Dyets, Minerals, Fricasses,
Pomatus, Fumes, Italia masks to sleep in,
Either to moisten or dry the superficies, Faugh! Galen
Was a goose, and Paracelsus a patch,
To Dr. Pulsefeel."

These were Cotgrave's words two hundred years ago.

Or shall I quote some directions given in 1678 as guides for those who would become quacks?

"However to support this title, there are several things very convenient; of which some are external accoutrements, others internal qualifications.

"Your outward requisites are a decent black suit, and (if your credit will stretch so far) a plush jacket; not a pin the worse though threadbare as a tailor's cloak—it shows the more reverend antiquity.

"Secondly, like Mercury you must always carry a caduceus or conjuring japan in your hand, capt with a civet-box; with

which you must walk with Spanish gravity as in deep contemplation upon an arbitrament between life and death.

"Thirdly, a convenient lodging, not forgetting a hatch at the door; a chamber hung with Dutch pictures, or looking glasses, belittered with empty bottles, gallipots, and vials filled with tap-droppings, or fair water, colored with saunders. Any sexton will furnish your window with a skull, in hope of your custom; over which hang up the skeleton of a monkey, to proclaim your skill in anatomy.

"Fourthly, let your table never be without some old musty Greek or Arabick author, and the fourth book of Cornelius Agrippa's 'Occult Philosophy,' wide open to amuse spectators; with half a dozen gilt shillings, as so many guineas received that morning for fees.

"Fifthly, fail not to oblige neighboring alehouses, to recommend you to enquirers; and hold correspondence with all the nurses and midwives near you, to applaud your skill at gossipings."

Any town of 10,000 inhabitants can in our day furnish an almost exact counterpart of this character.

But so it must remain. Man is credulous, and easily imposed on, and with all our scientific progress, with all our advances in civilization he so continues. Illustrations so crowd upon me that the difficulty is only to select. I limit myself to one.

In the middle of the last century Joanna Stephens proclaimed that she had (to use the happy circumlocution of the author of the "Book about Doctors," to whom I acknowledge my constant indebtedness) "discovered a sovereign remedy for a painful malady which, like the smallpox, has become in the hands of modern surgery so manageable that ere long it will be ranked as a temporary discomfort." After she had become wealthy by the sale of her medicines she offered to make known the secret of their composition for the "consideration" of five thousand pounds sterling. Through the Gentleman's Magazine the attempt was made to obtain this amount by subscription. But, though the Bishop of Oxford gave 10*l* 10*s*; the Bishop of Gloucester 10*l* 10*s*; the Earl of Pembroke 50*l*; Countess of Deloraine 5*l* 5*s*; Lady Betty Germaine 21*l*; the Earl of Godolphin 100*l*; Viscount Lonsdale 52*l* 10*s*; Duchess of Portland 21*l*; Earl of Clarendon 25*l*; General Churchill 10*l* 10*s*; and so on, and so on, it was in vain, only 1356*l* 3*s* having been raised. Application was therefore

made to parliament and the five thousand pounds was given to her to reveal the secrets—and that by the body of men who rule the British nation; who affect more wisdom than the rest of the world; and who, as a body, (let us give our bellicose cousins their due) have always been able to count among their own number more men of talent, more men of eminent ability than any other similar assemblage.

For \$20,000, then, at a time when \$20,000 was worth more than it is now, the British nation became the proprietors of Joanna's prescriptions, as follows:

"My medicines," reads her statement, "are a powder, a decoction and pills.

"The powder consists of egg shells and snails both calcined.

"The decoction is made by boiling some herbs—camomile flowers, fennel, parseley and burdock—(together with a ball which consists of soap, swines cresses burnt to a blackness and honey) in water.

"The pills consist of snails calcined, wild carrot seeds, burdock seeds, ashen keys, hips and hawes, all burnt to a blackness—soap and honey."

These, with the directions for preparing them, (one can scarce use the word pharmaceutical in such a connection,) were valued at \$20,000 by a people who are as ready to look sharply after their money as any nation in the world. Who can say that human nature is not credulous?

There are philosophical reasons for this easy credulity in medicine. The course of its enquiries is out of the range of common knowledge; and yet is so apparently within, that unprofessional persons think they understand thoroughly, that of which they are almost entirely ignorant. Take, for instance, that common disease consumption, and how everybody thinks he understands what it is. Somebody has told them of somebody who has coughed up one or both lungs, though it is impossible; or of somebody who has been cured by tying a red string round his arms, and they *know* it was so. So it is with fever. Everybody thinks he knows what fever is and what is good for it. And yet fever is only an expression, that is by the frequent pulse and hot skin, of a disturbance of the system, (local as in pneumonia, or general, as if it is malarial,) which requires to be ascertained to be treated wisely.

How many unprofessional persons can tell how many bones

there are between the elbow and wrist ; or between the wrist and the fingers. They have no occasion to know even these simple things, except as matters of curiosity, any more than I have to know what is the best arrangement of the throttle valve, or eccentric motion for steam engines. I confess any machinist could easily deceive me concerning these simple things, though I am not without some knowledge of machinery. I do not doubt that the assertion that there are three bones between the elbow and the wrist would go unquestioned by three-fourths of a miscellaneous audience.

Then the old fallacy "*post hoc ergo propter hoc*" comes in to blind the ignorant and to confuse even the learned. It is so easy to believe that if a certain course of medical treatment is adopted the result is in consequence of that treatment, that it is difficult without a series of experiments, to examine the question with philosophic candor. It is very pleasant to ascribe the cure to that which has been done ; yet it is the old argument used by the Indians on the occurrence of an eclipse. As the shadow comes over the sun or moon they seize their tomtoms and beat them furiously ; and after a while the shadow passes off. The argument that their treatment of the eclipse is effective and successful is just as good as that of many persons who, having given certain remedies for certain diseases, have found that the patients recovered ; only with this difference, that the Indian, out of a large number of eclipses which he has seen, and the memory of which is preserved in his traditions, has never seen or heard of one in which the treatment was not entirely successful. Reason with this Indian, attempt to convince him that it is not his treatment, by means of tomtoms, that effects the cure, but the laws of nature working out their own end and sequence, and do you think you will succeed ? You must teach him somewhat of astronomy before you can argue with him. And you must teach a man somewhat of medicine before you can argue with him concerning the effect of his therapeutical tomtoms. In fact the thoroughly educated physician may fall into the same error. That I may not be invidious, let me refer, as I have had occasion to do in another connection, to a fact stated by Trousseau, one of the most eminent of French practitioners. His former master, the distinguished Bretonneau, practiced medicine for thirty years in Tours, without losing a single patient with scarlatina, and did not hesitate to denounce the treatment of those who were not so

successful. Suddenly there appeared an epidemic of that disease, in which it developed its gravest features, and Bretonneau lost patient after patient; only then waking to the fact that the credit for his success was due to the disease, not to the treatment. He had been beating a tomtom.

The greater freedom from this fallacy constitutes one of the main attractions to operative surgery, both to the professional and the unprofessional person. A bone is broken, the limb is adjusted and bound up and soon the limb is again sound. Or the surgeon takes up his knife and removes a tumor. The tumor upon the table, the gaping wound, the bloody knife all prevent the suspicion of fallacy in the argument "*post ergo propter.*"

Here then I pause to say two things; *the one* that in estimating the essential dignity of the profession of medicine you are to exclude the charlatans. They are not so much its exponents as the shysters who infest the New York tombs are exponents of the legal profession. *The other* to repeat that in medical subjects mankind in general are utterly ignorant and easily deceived.

Turning to my immediate subject, I ask, *Is it dignified to be honest?*

I do not appeal to the lobby for an answer. Every one knows the members of that body are too diffident to praise their own virtues. I do not ask the army of contractors who swarm about and infest our national capitol, as did the lice in the times of the plagues of Egypt. I ask no special correspondent of the thunderer among newspapers. I appeal to no editor North or South who has helped to stir up our fratricidal strife by falsehood and misrepresentation; but to any one who, being free born and of lawful age, fills perfectly the duties of a *man*; who has learned to be honest, not because it is "the best policy," but because it is right. I put the question—Is it dignified to be honest?

If so, where is the occupation that requires more of this virtue? The physician must be honest with himself, honest with his patient if he would fill the duties of his office.

Perhaps there is no occupation in which there are greater opportunities to deceive, and there is no way in which charlatans are more successful. This is in fact the first virtue which the quack does and must ignore. May I illustrate the manner in which it is done from the casebook of my own experience.

A lady was urged by her friends to send for a prominent homœopath as her medical adviser, and knowing of no better

way to decide between her preferences for me, and their wishes for him, drew lots. The decision was in his favor. Upon his first visit to her she told him that these were the facts, and added that she did not wish for any potentizations or dilutions. "Madam, we only use such things when there is nothing the matter. It pleases people. But when they are sick we treat them in the old way." He was honest enough to acknowledge his dishonesty.

Another prominent homœopath lately said to one of my professional friends whom he was urging to operate on a patient, both to remain in attendance, "After all, doctor, there is no difference in our practice."

Or, turning to the other end of the scale, one of those practitioners who is neither learned nor distinguished, once narrated to me the particulars of a case of hysteria seen by him in consultation. Meeting him in the street some days later I enquired for the patient and he said "Dr. ——— was fool enough to tell her what the matter was and she was angry and dismissed him. Now I attend her every day. She is rich." "Yes," I answered, "but what do you call it?" "Oh, I called it inflammation of the brain, and she is a great deal better satisfied," I happened to know of two other instances in which he tried the same trick, though with less success.

Did you ever notice how, if some new disease is spoken of, these fellows always have the earliest cases of it, though they generally succeed by their wonderful skill and by the use of remedies known only to them, and not to the faculty, in breaking it up.

I ought to say that I draw my illustrations from the homœopaths only because they happen to be just now the most fashionable of quacks. If it were not they it would be some St. John Long, or some other style of the same general character.

The fact is, when we have been sick we, all of us, like to have been in great danger and to have escaped it. It is something to tell of. And we like to have been among the first cases of some new epidemic. Especially do wealthy people enjoy this. It is a luxury the poor cannot afford.

Now confess, Mr. Layman, if your throat is a little sore and you are chilly, and your physician tells you that you have a little cold, that you are to take some congress water and to stay at home the next day, when you will be well; are you half

as well satisfied as you would be if he had paraded divers instruments before you, looked earnestly into your throat, shaken his head, looked again and then sunk into silence suggestive of profound thought; and then announced to you that you are in the early stage of diphtheria—that he *thought* that by using something which he had just received from Germany (there being no more in this country) he could save you, don't you think you would have enjoyed it a good deal more?

And Mrs. Layman, had you not a great deal rather have the reputation of having been laid up with inflammation of the brain, than of having had hysterics. At any rate, Queen Anne did not seem to be at all pleased when Radcliffe said she had the vapors and never forgave him for it.

Believe me, friends, it would be just as easy for us to deceive you as for others to do so, and you have reason to congratulate yourselves in your pocket as well as in your health that the members of the profession are more honest.

But again, *Is it dignified to be brave?* A year ago I might have hesitated to ask this question. But now, when the whole country has sent up its paeans of praise, so justly deserved, to the brave Anderson and his little band; when the nation has wept at the grave of Lyon; while more than half a million of our brothers endure the privations of the camp with all its exposures to the inclemency of the elements, and are willing if need be to lay down their lives for the republic, surely *now* there can be but one answer to the question.

But I dare to claim that the medical profession yields to none, not even to that of arms, in the practice of this virtue. We lead no serried hosts to the conflict; we go with no enthusiastic cheers from thousands of comrades; no martial music fills the air to inspire our heart, and to drown our fears; we feel not the electric sympathy which causes the hearts of armies to vibrate with a common hope; but alone, sustained only by the desire to do his duty, not forgetful of his danger, not indifferent to the peril, the physician enters with a firm step and quiet heart, with no blanching of the cheek or tremor of the lip, the perfumed chamber of the rich man, or the foul hovel of the most degraded of humanity, where the air is thick with the vapor of pestilence more likely to seize upon him and slay him than a hundred hostile pickets hidden by the way side, and a thousand times more

sure to reach its mark than an Enfield rifle or an Armstrong cannon.

If you doubt it, read with me the records of that fearful disease brought to us a few years ago by the thousands of emigrants hurrying for their lives from downtrodden, oppressed and starving Ireland. Read the long list of those who fell even before they had attained the honors of a master of our art, and of those who in riper years, surrounded by everything to make life desirable to them, have died without a murmur and without a regret.

At the entrance of one of the most distinguished medical schools of our metropolis there are engraved upon a marble tablet the names of a few of these young braves, whose memory is cherished by their Alma Mater, and around which she has written the affectionate legend, "These are my jewels."

Often as I have entered those crowded fever wards with many different physicians, I have never seen one flinch or falter, whether it were by day or by night ; whether it were in the broad and cheerful sunlight, or by the glimmer of a feeble lantern, just revealing the rows of coffins which lined the mournful entrance, filled and ready to bear their sad burden to its last home ;—unless it were a young recruit exposing himself for the first time to the peril. To such I have never heard taunts or railery used, but words of quiet assurance that fear but added to the peril of contagion ; and such words of gentle encouragement as one brave man may say to another.

Neither has war left us without abundant evidence of the bravery of surgeons. In the Crimea, at Solferino, at Bull Run, at Somerset the surgeons remained true to the principles of the profession, going into the thickest of the battle to bear away a wounded officer ; dressing wounds when necessary without any protection from the thick falling bullets as coolly as if in a hospital ; or, when to escape was easy and the means ready at hand, they have remained with their wounded, choosing imprisonment, sickness and death, rather than to desert the post of duty.

But, *is it dignified to be charitable ?*

I do not ask is it *fashionable*, but is it *dignified* ? Not being charitable in one's will, or pompously at the corners of the streets, or in the crowded thoroughfares ; not with the blowing of a trumpet ; not exclaiming, See how much I give—this is not

my meaning. In such charity there is no dignity, no charity, only hypocrisy.

But in the charity of him who, when the Priest and Levite passed by on the other side, sought for the poor traveller who had fallen among thieves, "bound up his wounds, pouring in oil and wine, and set him on his own beast, and brought him to an inn, and took care of him, and on the morrow when he departed took out two pence and gave them to the host and said unto him, take care of him, whatsoever thou spendest more when I come again I will repay thee;" in the charity of the good Samaritan, thus recorded by St. Luke, the physician as well as the Evangelist, we have illustrated the charity of physicians. To them the cry of suffering humanity however low, however forlorn, however abandoned, is never made in vain. Do you demand proof? Ask those learned in statistics how the gratuitous services rendered by the medical profession in the city of New York compare with the amounts spent in charity by the corporation of that city, world famous for its lavish expenditures, and they will tell you that so far as the value of such things can be estimated in money, calculating it at the lowest rates, the corporation takes no first place. And so anywhere and everywhere can I find proofs of this assertion. But this must suffice. For I would not cause the cheek of this heavenly charity to blush with the praise of her own beauty.

Neither do you, my brothers, desire that I should stand up here to sound your praises. We have all felt that the world knows little of these sacrifices and these labors. Let us remember, that, if the world sees them not, and if the world knows not of them, it knows not of the rewards.

Let me quote the anecdote of an eminent surgeon, who having been solicited by a patient to perform for him a difficult and important operation, for which his fee was a hundred guineas, was met by the apology "I am a poor half-pay officer, in pecuniary difficulties, and I could not even if it was to save my soul raise half the sum you mention." "My dear sir," replied the surgeon, "allow me the very great pleasure of attending a retired officer of the army gratuitously." The offer was accepted, the operation performed, the patient visited daily for more than three weeks, without the surgeon's receiving a guinea. And three months afterward he discovered that the patient was a magistrate and deputy lieutenant for his county, and owner of a

fine landed estate. When the surgeon told the story he added, "and I will act in exactly the same way to the next poor man who gives me his word of honor that he is not rich enough to pay me."

Do you remember the reproof given to a French archbishop by his physician, "Don't treat me now as you do those fellows at the hospital." "My lord, I treat each of those poor fellows as if he were an archbishop."

Even Abernethy, uncivil, rough and crusty as he was, abounded in this virtue. Not unfrequently dispensing his own medicines when the prescription read "*recipe auri quantum sufficit*," even when that "sufficient quantity" was fifty pounds.

But, *Is it dignified to be patient?* And who has more need of that virtue than we? The sick man is always selfish and garrulous. He may bear pain with the greatest fortitude, and be of the most gentle temper, but when his physician comes, how he pours out to him the pent up stories of his own feelings. And the physician must sit and hear it as quietly as may be, enduring it for the patient's sake, and watching for some opportunity to relieve him from his own thoughts. It is in fact very often the case that a few moments are sufficient to enable the physician to see all that he needs to see, and to judge with perfect accuracy of the condition of his patient. But how few are satisfied with such a course. "Mr. Abernethy," said Curran, "I have been here on eight different days, and I have paid you eight different guineas, but you have never listened to the symptoms of my complaint. I am resolved, sir, not to leave the room till you satisfy me by doing so." With a good-natured laugh Abernethy fell back in his chair. "O! very well, sir, I am ready to hear you out. Go on. Give me the whole. Your birth, parentage and education. I wait your pleasure. Pray be as minute and tedious as you can." With perfect gravity Curran began: "Sir, my name is John Philpot Curran; my parents were poor, but, I believe, honest people, of the province of Munster, where also I was born at Newmarket, in the county of Cork, in the year one thousand seven hundred and fifty. My father being employed to collect the rents of a Protestant gentleman"—and so on, and so on, till Abernethy was convulsed with laughter.

Gentlemen, if there is any one of you who has not had a somewhat similar experience, I beg him to make it known at our first

reassembling for business, that the rest of us may have an opportunity to admire such a wonder.

And then when the gossips which are everywhere, take one's name and bandy it about as if it were a football, or repeat what the doctor has said till he cannot recognize it as his own progeny, is there not some patience requisite in such a case?

You may have said of a patient that "digestion is imperfect," and it comes back to you that you said the "digester is broken off." Or you hear it quoted as your opinion that the *pious* patches were inflamed, when you spoke of the patches discovered by Peyer.

It is a bitter trial to hear such things, and a thousand worse passing about from one to another to the damage of one's professional reputation and pecuniary interests, and when to contradict them is as useless as to argue with the wind.

But both time and your patience will fail me if I thus dwell on each point that suggests itself in illustration, and I hasten to be more brief.

The practice of medicine demands one to be temperate. Requiring the best faculties of the mind to obtain, examine and weigh the evidence, and the use of every sense to aid his judgment, how can the physician ever venture to dull one faculty, or blunt one sense by the bowl? Or when is he so sure that his services will not be needed by some one, that he can venture to engage in a debauch? Does a steady hand, or a quick ear, or a delicate touch come of intemperance?

Purity too must attend it. Such purity that when poor humanity must lay itself bare that it may escape suffering or death, nothing shall be added to its shame; purity, such as shall shield from the slightest taint the spotless maiden even while she receives counsel as from a mother; such purity as clothed Lady Godiva when naked she rode through Coventry to save her people from oppression.

"The deep air listened round her as she rode,
And all the low wind hardly breathed for fear."

Fidelity to the confidences reposed in him must also be a characteristic of the physician. These confidences are necessary, their preservation should be perfect. How many times does the happiness of a family or the usefulness of an individual depend on the faithful custody of these secrets. Who indeed cares to

have his infirmities paraded before the world, and to his physician he must disclose them.

But let me not be understood to claim that every physician sets forth all of these virtues, that all are honest, brave, charitable, patient, temperate, pure and true. Neither is my argument to be met by pointing to one or another who has failed in one or more of these particulars. That the profession of medicine demands these things would be true, though perfect examples were more rare than they are. We are but men and with the failings of men; and if we fall we have the poor consolation that no profession is exempt from such mishaps. And to-day I will compare the medical with any other profession on any or all these points with no fear for the result.

Such a profession contains all the elements of true dignity, and although monarchs rarely bestow upon its members the higher honors of their courts, though no peerage attests their appreciation of its worth, its mission is far nobler than leading armies or destroying navies.

Taunt us as you please with our quarrels, and where can we not match them? Do our legal friends never use hard words to and concerning each other? Or is there with our clerical friends no "odium theologicum" cruel and implacable? Do politicians and statesmen always agree? Do our financiers love each other with a cordial love? Do even tradesmen dwell together without bickerings? I trow not. And yet the opportunities for difference between these are as nothing compared with those which medicine offers. Most undoubtedly doctors do disagree, but the grounds for such disagreement are frequently abundant. The disease is obscure, its symptoms are not definite, and all signs combined do not lead to certainty. It is not strange then that we should differ, and, since these differences are in matters of personal opinion, quarrels will sometimes follow while human nature remains what it is.

Gentlemen, I have thus endeavored to set forth some of the claims of our profession to a more just appreciation from those about us. With little hope that it will be successful, I cannot but feel that I have in this done my duty. The imperfections in my method I am well aware of, as well as of the fact that I have left much unsaid which might have been urged with profit. But to you I need not repeat these things, and I would not weary with too prolix a discourse our friends here present.

I do not ask, none of us would desire, any honors or any reverence such as ignorant people are wont to render superstitiously to those who heal the sick. But I do desire a more correct appreciation on the part of the community at large of the true and essential dignity of our profession. I desire it for their sakes, and I desire it for our own. It is humiliating after years of patient study and labor to find that our professional opinion is placed on a level with that of some ignorant farrier who from doctoring horses goes to doctoring men. Or to find that some arrant liar succeeds in snatching away by his very impudence the rewards of the profession which are justly due to honest integrity. But we must remember that these things are a reproach not to us, not to our talents, but to our poor humanity. How many are its failings which we cover with the mantle of charity. Let us add this to them.

It is not necessary for us to assume those airs of false dignity which lead one to be always talking of his patients at the corners of the streets, or in the bar-rooms, or wherever gossips are assembled; which delights in technical terms and which makes one's conversation always smatter of the shop. There is no dignity in these.

But if we remember that our calling is one which is worthy of man; which demands earnest efforts to learn how to relieve the suffering and to heal the sick; which requires him ever to keep body and mind in readiness to decide upon and to act in the most critical cases when life hangs upon a thread, how can we desire a truer and greater dignity. If our breasts bear no jewels betokening the approval of an earthly monarch, we know in our hearts that we have the approval of One greater than all kings and potentates.



Article 2. A review of the case, *The People against REV. HENRY BUDGE*, indicted for the murder of his wife *PRISCILLA BUDGE*, (tried at the Oneida, New York, Circuit Court, in August and September, 1861,) containing an examination of the medico-legal questions involved in the case; a review of the positions taken by the medical witnesses for the defence; an extended discussion of the positions assumed by the medical witnesses for the prosecution, with cuts, and tables for illustration; letters and opinions from various eminent American and Foreign medical jurists; together with copious abstracts from the evidence adduced and the judge's charge in the civil action of *HENRY BUDGE* against *CALEB LYON*, for libel, tried at Herkimer Circuit in October and November 1861. By *JOHN SWINBURNE, M. D., Albany, N. Y.*

On Sunday morning, December 11, 1859, Mrs. Priscilla Budge, wife of the Rev. Henry Budge, of Lyons Falls (Greig), Lewis county, was found dead in her bed, with her throat cut, extensively. A coroner's inquest was held, the same day; there was no post-mortem, and the proceedings were similar to those usually had in an ordinary and readily explained case of sudden death. The doctor merely cleansed, stuffed, and sewed up the wound, and the verdict of the jury was, "*Death by suicide.*"

Suspicious circumstances, moral and physical, subsequently induced a disinterment of the body, four months afterwards, and a thorough examination of all the facts.

The first inquest occupied but part of one day—the second, several days. On the second inquest, upon the facts developed, a verdict of murder against the husband was rendered. Upon this, the prisoner demanded and secured an examination before the coroner. After a prolonged hearing, during which I was on the stand for twenty-two consecutive hours, the prisoner bringing forward no witnesses, he was committed for the action of the grand jury, on the charge of *murder*.

Subsequently a writ of *habeas corpus* was issued by Judge Bacon, of Utica, and on argument thereon, he was discharged from arrest, on the ground of the alleged illegality of the *second inquest*, without any reference to the merits of the case, before the coroner.

The latter part of May, and fore part of June, about one month subsequent to the above, the matter was brought before the grand jury of Lewis county. Judge Morgan, of Syracuse, specially charged the jury on this case, instructing them to examine thoroughly into it, and to take testimony of all persons who knew anything of the facts, *pro* and *con*, especially the medical men, &c. The result was that after the examination of witnesses, among them, Dr. Olmstead, the family physician, and strong personal friend of the prisoner, and the first and only physician who saw the body of the deceased, and of myself, on the part of the people, while on the part of the defence, Drs. Thomas, Coventry and Hogeboom, of Utica, and two or three of the local physicians, *eleven* of the jury were in favor of indicting Mr. Budge. Several witnesses, who had been subpoenaed, did not reach court until the jury closed the case, and adjourned.

Some time in September, 1860, the case was again brought before the grand jury of Lewis county. Judge Turner, also charged the jury to hear testimony in this case, *pro* and *con*. On the part of the people, as witnesses, were the venerable Dr. James McNaughton, of Albany, Dr. C. H. Porter, and myself, and Dr. Olmstead, of Leyden. On the part of the defence, Drs. Clark, of New York, Coventry, Hogeboom, and others. The jury after a prolonged hearing, indicted the Rev. Henry Budge for the *murder* of his wife, Mrs. Priscilla Budge.

Judge Morgan, of Syracuse, subsequently released the prisoner, on *ten thousand dollars* bail.

In August and September, 1861, he was tried at Rome, Oneida county, Judge Allen presiding. After a trial of many days, in which *no* medical witnesses were called for the defence, and in which surgeons Mott, of New York, J. McNaughton, of Albany, and myself, on the part of the people, were subjected to lengthy and searching examinations and cross-examinations, the trial was suddenly brought to a close by the interposition of the court, which stopped one of the surgical witnesses from explaining in detail the action of the heart and lungs after the cutting of the

pneumo-gastric nerves. The case went to the jury, *pro forma* merely, and the prisoner was acquitted on the direction of the judge.

In relation to the sudden termination of this case I quote from the *Albany Times and Courier*:

A REVIEW OF THE BUDGE CASE.

"We publish to-day some of the evidence taken in the Budge murder trial, and also the views of the *Rome Sentinel* on the subject. It will be remembered that the examination of the body of Mrs. Budge was made four months after her death by Drs. Swinburne and Porter, of this city. They (from the testimony taken before the coroner as to the condition of the body, bed, instrument, &c., when collated with the dissection post mortem,) gave it as their opinion that Mrs. Budge came to her death by other means than her own hands. The medical facts of the case were submitted to Prof. Taylor, of Guy's Hospital, (author of *Taylor on Poisons*, and *Taylor's Medical Jurisprudence*), who gave his opinion, as published previously in this paper. The facts as they appeared before the coroner (acting as justice), were laid before most of the eminent medical men of New York and this city, as well as several foreign medical jurists, and their opinion coincided with Drs. Porter and Swinburne.

"The testimony taken at the trial was essentially the same as that before the coroner. The venerable Drs. Mott and McNaughton sustaining Dr. Swinburne, whose examination continued most of three days.

* * * * *

"In this connection we give the material testimony of Dr. Mott, as reported in the *Rome Sentinel*, Sept. * * *

"This morning Dr. Valentine Mott, the eminent New York surgeon, was placed on the stand. He testified that he had been 56 years in practice, and had many cases by throat cutting. By far the greater number of suicides by throat cutting were too high up—that is, above Adam's apple. The flow of blood from a suicidal wound of this kind would be tremendous; the flow would be very great and extending very far. In the case of a person lying down with head imbedded in the pillows, not only the hand inflicting the blow would be very bloody, but there would be a great display of blood about the face and every part of the front of the person. The blood would fly in all directions, and if the walls of the room were in reasonable distance, it would hit them. The face and upper part of the neck would be very bloody, and there would be a full display of blood on the headboard and wall. The right hand, forearm and razor would certainly be very bloody."

"Dr. Mott's cross-examination elicited a point to which his attention had not been called of late years, and which was of

vital importance to this case. In olden times it was thought that the cutting of the pneumo-gastric nerves would result in immediate death. Modern physiology shows this to be a fallacy, and that death only follows after days, while it does not interfere with the full and free circulation and active contractions of the heart, which continue until the body is emptied of blood. This is the case in cutting all the nerves and vessels of animals slaughtered, and in decapitations of criminals.

"Dr. Mott, by acknowledging this point, had also to admit that the lungs must be congested as a sequel of the heart's paralysis. Taking this theory of the case, it would account for the comparative bloodless condition of the bed, and the bloody cerum found in the pleural cavities. This fluid is not found in the cavities of animals bled to death. This did not account for the bloody finger marks on the face and right hand pillow, which were supposed to be made by a hand not materially bloody. If Mrs. Budge died instantly upon cutting the nerves, how came the tongue bitten laterally, and the bloody finger marks on the face and pillow? Of course the hand is paralyzed as well as the heart. How came her head pressed firmly backwards in the pillow, and the spot of blood on the sheet below, 12 or 14 inches square, which seemed saturated with blood."

The following is from the Rome Sentinel, Sept. * * *

Judge Allen—Then I would submit to you whether, after the diligent investigation we have already given to the case, you deem it best still to press for a conviction. Certainly this was a case fit for a jury to investigate. As it first presented itself to those in the neighborhood, it was a case of strong suspicion, difficult to explain, from the position and surroundings of the body; the character and extent of the wound, (such a wound as Dr. McNaughton would not believe could be made by the person herself, were it not for the cases in the books;) the account given of the blood, as reported by those who were not accustomed to see such appearances, and who were not observing them for future statement and to be reported. These things, and the appearances found at the post-mortem examination, all tended to throw strong suspicion on the prisoner, and made out a case calling for judicial investigation. But from time to time during the trial qualifying circumstances have been proved tending to show how the blood might have appeared as it did, how it might have got into the lungs without asphyxia; and a new element has been brought into this case this morning in relation to the par vagum nerves, the effect of their destruction on the action of the heart, and the appearance of the lung after death. Now it is not for me to say that the case shall close. There are circumstances that might be urged forcibly to the jury; but it strikes me that as the case stands it is only a balance of probabilities, in which it would be unsafe to convict. It was a proper

case for investigation. It was due to the prisoner as much as to the public that it should be investigated. I have been very loth to interfere—but I think the case has taken much time, and if it continues, much more time probably will be taken. Counsel will appreciate the reasons which prompt me to make this suggestion.

THE MURDER TRIALS.

Two persons—one an educated and reverend minister—the other a dissipated low-lived individual—have been tried for their lives during the past few days in this village, and in neither case has there been a satisfactory arrival at the ends of justice. We are not complaining of the verdicts which were rendered—for under the circumstances the respective juries could not have decided otherwise than they did. We do not complain of the relieving of the accused parties from the imminent peril in which they stood. But we do complain, and that very earnestly, that after the counties of Lewis and Oneida have been put to an enormous expense for the prosecution of these parties, and for the vindication of the right of the deceased persons to have a strict inquiry made into the causes of their death, the public are still left without satisfactory and final knowledge as to how and by what means Mrs. Priscilla Budge and Lucinda McGinnis severally came to their death. In the Budge case in spite of the astounding inventions to that effect propagated in the Utica papers of Friday, we are constrained to aver that no certain theory of the cause and circumstances of death has been arrived at. Judge Allen—whose dignified demeanor and profound familiarity with the science and practice of law, especially qualified him to preside at a trial where men of the most eminent professional talent in this part of the State were arrayed opposite each other for and against the prisoner—used no such decisive and satisfactory language in regard to the reason for acquitting the prisoner, as that which the Utica papers presumed to put into his mouth. Instead of expressing his conviction that it had been clearly proved that the death of Mrs. Priscilla Budge was a case of suicide, Judge Allen said, as we elsewhere literally report him, that the case as it stood was one, though of "strong suspicion," yet so modified by "qualifying circumstances" that it became a mere "balance of probabilities" as to whether Mrs. Budge died by her own hands or by those of some murderer. Of course, neither Mr. Budge nor anybody else should be convicted by the weighing of "probabilities." It is only "certainties" that justify conviction; and in this case there was and is no certainty in the evidence, taken as a whole, and therefore Mr. Budge very properly received the benefit of the doubt and was acquitted.

So in the McGinnis case. There is no more definite conclusion arrived at by the acquittal of George, than by that of Mr. Budge. It is a mere "balance of probabilities" whether Mrs. Budge killed herself.

* * * * *

Now, there is something unsatisfactory and that demands remedy in this. When a member of society dies, whether it be a lady occupying an estimable position in society like Mrs. Budge, or a poor girl like McGinnis, the community is entitled to know "how and by what means the deceased came to her death." It is for this the public pay coroners to hold inquests; it is for this that doctors are paid for holding post mortem examinations; it is for this district attorneys are elected and courts held. The public safety means the safety of individual members of society. When Mrs. Budge and Miss McGinnis die unnatural deaths, and the public find that forever henceforth the causes of those deaths are left in doubt, and the mystery unsolved, there is room for complaint. It becomes the duty of the press in such cases to inquire whose fault it is, that with all the cost that has been incurred, with all the machinery which is maintained at the public expense for the purpose of finding out how deaths are caused; we are yet left with nothing better than speculations and probabilities in regard to the causes of these two deaths.

Now whose is the fault? The judges tried these causes with careful impartiality and abundant legal erudition. The juries patiently endured their monotonous task. The counsel displayed acumen, industry, and an interest amounting almost to enthusiasm. Whose fault then is it that no more definite result was arrived at?

* * * * *

And those who heard the evidence in the Budge case throughout, can easily see that the weak point of that case lay at the same spot. The village doctor who was first called in to see the dead body of Mrs. Budge, did not seem to dream that a woman's head could be half cut off by anybody but herself. He actually did not suppose that the coroner would need him as a witness; much less that a judicial investigation might subsequently need his evidence. Instead of taking out his note-book and carefully recording on the spot every atom of fact in regard to the spots of blood, the quantity, the position of the body, of the marks of blood and everything else which could throw a light upon the circumstances of the cutting, this doctor seems to have contented himself with poking cotton-batting into the wound and sewing it up.

It is to be hoped that these two cases will be a lesson to gentlemen of the medical profession, when they are called in to see a body which has evidently come to its death by other than ordinary means. When there is a body found in the water, the public are entitled to something more definite than speculations as to whether the body fell in, or jumped in, or was pushed in. When a body is found with its head half cut off, the public are entitled to something more than a "balance of probabilities," as

to whether her own or somebody else's right hand gave the fatal cut. The needed certainty can be had, in the present state of medical science, in ninety-nine cases out of a hundred. Does any one suppose that if Valentine Mott had been first called to the bedroom of Mrs. Budge there would now be more than one opinion as to whether the death was a suicide or homicide? Or that if Dr. Mott had made the post mortem on the body of the McGinnis girl there would have been room for argument as to whether she was drowned or strangled?

It may be said that at the best the opinions that medical men can give in such cases are only theoretical and circumstantial. But it must be remembered that in a case of murder no evidence but circumstantial can be expected. A murderer does not commit his crime in the presence of third parties. There can be no possible conviction in such cases except on circumstantial evidence; and such evidence, clear and irrefutable, can be given on the point of whether the death was by murder or not, in nineteen cases out of twenty, by any medical examiner who understands his business and pays the proper amount of attention to his duty."

A not unimportant fact connected with this case, is the result of the libel suit brought by the Rev. Mr. Budge against Hon. Caleb Lyon, of Lyonsdale. The latter, it was alleged, had in some verses charged Mr. Budge with the murder of his wife, and other gross offences. In the suit, damages were laid, I think, at \$20,000. Mr. Lyon set up justification as his defence, as to the charge of murder, and no justification as to the other offences. Last October and November, the case was tried at Herkimer, Judge Mullen presiding. Eminent counsel were arrayed on either side. As witnesses for Mr. Budge, appeared Drs. Clark, of New York, Coventry, Hogeboom and Thomas, of Utica, Olmstead (the family physician), of Leyden, and on the part of the defence was Prof. Porter and myself. The trial lasted about three weeks. The fact of publishing the alleged libel was clearly proven, and not controverted. No defence to a portion of the alleged libelous publication was ever set up in the answer, or on the trial. The justification related only to the part charging murder.

After three weeks of careful and patient investigation the trial was concluded by the jury rendering a verdict of *one hundred dollars* for the plaintiff, the damages claimed being, as I have before stated, *twenty thousand dollars*! Inasmuch as this slander trial contains the full defence, as well as the prosecution of the murder trial, and *vice versa* the *slander* case, I will make a synopsis

from this reported testimony, as containing the whole case, of which the following is the title:

HENRY BUDGE,
ag't
CALEB LYON. }

In this cause, the following is a brief portion of the medical testimony:

Mrs. Budge, aged about 40, weight about 96 pounds—spare habit of body, but enjoying ordinary health and spirits, was found *dead* and cold in her bed, with her throat cut extensively; and from the circumstances attending the death, the *entire* absence of the *physical* appearances of death from cutting of carotids during *life*, the absence of "*spirts*" and *spatters* of blood, *position* of the *body* and *surroundings*, the moral circumstances also of unhappy relations having existed between her and her husband for some time, induced an examination in *form*, and from this cursory examination, nothing was elicited, (except the testimony of the husband,) which threw any light on the subject. This examination was really a form, and nothing else. *Four months* after this, I, in conjunction with Prof. Porter, and several of the local physicians, made a careful dissection of the body. It had been buried in a grave of *sandy loam*, about four feet deep, which was as thoroughly cold as a northern winter could make it. The body was entirely cold at its burial—the ground frozen for three feet, and chilled to the *freezing* point, much lower, so that there could be no decomposition going on. It remained in this condition until the dissection, four months after burial, which revealed the following condition:

SYNOPSIS OF THE DISSECTION, POST-MORTEM.

An extensive cut was found on the neck, having the following *Position*.—On the right side $3\frac{1}{2}$ inches below the lobe of ear—on the left side, about $3\frac{1}{4}$ inches below lobe of ear— $4\frac{1}{4}$ inches below centre of chin on medium curved line severing cricoid cartilage, œsophagus, arteries, veins, pneumo-gastric nerves, and all the muscles of the anterior part of the neck. Circumference of neck above, or at the wound, twelve inches—curved length of cut $5\frac{1}{2}$ inches. Depth of cut in a direct line, 2 inches back to the vertebræ, cutting through the periostium, and into the osseous matter of the fifth vertebræ, and also shaving off a lateral portion of the transverse process of this vertebra.

Skin on the right side cut down $\frac{1}{2}$ to $\frac{3}{4}$ inch lower than tissue. Tissue on the left side cut deeper than skin by about $\frac{1}{2}$ to $\frac{3}{4}$ inch, and extending down into the muscles external to the vertebræ, so that the skin at the termination of the cut on the left side appeared as if stretched and rounded instead of being sharp, or angular. Trachea and tissues retracted, so that the wound gaped about two inches. *Tongue*—There was distinct ecchymosis on each side, at points opposite the molar teeth. On the left side, this covered a surface of one *inch* in length, and $\frac{1}{2}$ inch in a lateral direction. On the right, $1\frac{1}{2}$ inches in length. On the upper and wider part, near the base $\frac{7}{8}$ of an inch, and diminishing towards the anterior portion, where it was $\frac{1}{2}$ an inch, and extending through the mass of the tongue, and visible from either side, as was demonstrated by making incisions through its substance, and subsequently soaking it in water. The tip of the tongue was somewhat discolored but not ecchymosed. The œsophagus for the space of about two inches near and below the root of the tongue was of an abnormally red, or maroon color.

Right lung congested and engorged with blood, and apoplectic—pleuritic adhesion slight—otherwise healthy. Heart entirely sound in every particular. *Chest*—bloody serum in both cavities of chest—on the left side full 5 oz.;—on the right side, full 8 oz.

Right lung—weight 9 oz.—specific gravity, .819.

do small congested portion of this lung, .885.

do apoplectic, .922.

Right lung, weight with fluid 17 oz.—specific gravity with fluid, .904.

Fluid in right cavity thick, and of the consistence of blood.

Left lung—weight $7\frac{1}{2}$ to 8 oz.,—specific gravity, .692.

do weight with fluid $12\frac{1}{2}$ to 13 oz.

The heart, and large vessels were empty, while the capillaries of the extremities and dependent portion of the body were full of blood, and all the muscles retained their juicy and florid appearance. The right lung continued to discharge bloody serum, while the microscope distinctly revealed the presence of *diffused* and *circumscribed apoplexy*, as well as engorgement of its tissues. The left lung, when placed in a jar of fluid presented a large amount of *débris* of broken-down blood in the dependent portion, while the fluid was very much discolored.

Brain examined—no appearance of any disease. All the other

organs examined and found healthy and free from congestion. Stomach and organs removed for chemical examination.

From the testimony taken at this inquest the following extracts are made :

The room was about eight by ten feet, and about eight feet high, and contained a bed, (French cottage,) washstand and chair—there was a space in front of the bed of about three feet, and the same at the foot. This bed was composed of a straw and feather-tick, two sheets, two French pillows and covers ; also two coverlids and quilts. The long axis of the bed corresponded with the long axis of the room, and hence the space at the side, and foot of the bed, and none at the head or back side. The bed-clothes were undisturbed, and carefully tucked in at the sides and foot, as if she were asleep, as one witness says, “looking from the foot of the bed she appears as if asleep,” with the eyes and mouth closed firmly. The *coverlids* were carefully turned down on the left side to about the left breast, while on the right, they were turned down about twelve inches farther, and smoothly, as if done with care. The blood flowed from the wound in the direction of its gravity *i. e.*, directly down behind the neck, back, and head, extending laterally on the right from the neck from two to four inches, and on the left, one to two inches—running up, under the back of the head, and down under the right hip, and making an irregular stain on the sheet of about twenty by twenty-seven inches. The width of the blood-stain where the neck and head lay, could not exceed nine inches in width. The back of the right shoulder and arm lay in the blood, and hence were bloody ! On the left side there was little blood.

At the examination before the coroner, the family physician remembered of having seen blood (in spots, and not as if soaked in blood) on the anterior part of the sleeve of the night dress, near the wrist, and not on any other part. The lady who washed the body, as well as the coroner, and nearly all the other witnesses, say there was little if any, (and that more like a stain,) unless such as was produced from coming in contact with the blood in the bed.

There was at most, a mass of bloody feathers in the feather-bed, matted together, equal to about a quart mug full ; the remainder were not soiled, nor were there any adhering to the feather-tick. In the pillow on which the head lay, the amount of blood was evidently small. Taking *this* and *other* data, as a

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guide, there could not have been more than about one to two pounds of blood lost. There were no *spirts* or *spatters* of blood in *any* direction, and there was no blood on the anterior part of the *body, night dress, or body clothing*, below the cut, nor was there any on the face and neck, above the cut, except a slight stain of blood on the under side of the chin, as if some bloody thing had been wiped against it, and the *bloody finger marks* hereafter referred to, on the face; no blood stains on *headboard, pillows, bedstead, clothes, walls, or otherwise*, except as above described.

The family physician discovered a few (6 or 8) spatters of blood on the face, (in addition to the finger marks) as large as a *pin's head*, while no one else sworn on the inquest or before the magistrate, saw them, not even the lady who washed her.*. He says on his first examination: "I discovered no spatters upon the bed clothing, nor nowhere else, except on the face; discovered blood on the pillow, under the neck, and can't say that the blood extended two inches on either side of the neck; besides the spot of blood on the upper sheet of 6 to 8 inches one way, and 10 to 12 the other, discovered no other blood on the upper clothing, etc." At his first examination he discovered exactly what the other witnesses did, except the spatters on the face. On his second examination, he says, in substance: "The bed clothes were turned down across her chest, 8 or 10 inches below the chin, lower on the right side than on the left, folded smooth on the left side. She lay on her back, a little inclined to the right, body nearly straight, head on left pillow, inclined back, and to the right, left hand on left breast, palm down, fingers partly flexed, right hand and arm lay to the right, palm up, and looking towards the body. A razor was lying under the arm, nearer the wrist than elbow, two-thirds open, the blade uncovered, edge lying towards her, two-thirds of the edge in length, and one-third in depth, i. e. two-ninths of the razor blade was bloody. The inside of the fingers of the right hand were stained with blood; noticed no blood between the fingers; no blood on the upper bed clothing, (except the spot on the upper sheet,) blood on the right cheek and chin, as though something bloody had touched them; they were only slight stains, and some spatters of the size a half drop of blood would make, in striking on a surface; some not larger than a pin's head. Of these there may have been a

* These were not seen by Mr. Shepard, who first saw the body, and hence I would suppose that these might have been sprinkled on by Dr. Olmstead while washing and cleaning the wound.

dozen; discovered none of these sprinkles on the left side of the face. The blood extended on the right side from the neck on the pillow, perhaps two inches, on the left, perhaps an inch. The blood flowed back from the wound, into the clothing, back of her neck and head, and down under her, which ran by gravitation up as far as the ear and as far below the wound as I could see without raising her. There was more blood on the right side than on the left of the wound; no blood on the wrist of the right arm. The sleeve of this arm, from 4 to 6 inches, was besprinkled with blood, but not entirely covered, as though soaked most near the wrist. There was a spot of blood 5 or 6 by 12 inches on the sheet in front of her, which was soaked; no sprinkles or spatters about it; I attempted to stanch and suppress the blood in the cut before putting the cotton bat, as far as I could. There was much blood running into the wound; there might have been from 3 to 6 ounces; I put in cotton batting and the blood continued to ooze out of the wound, as I sewed it up, so as to be bloody in front." Otherwise there was no variation. I have taken the points in the statement contained in this article, from my dissection of the body, and the following witnesses sworn, all on the slander suit, and most of them on previous occasions, involving the same data:

1st. *Thomas Rogers*, the coroner, examined the body carefully.

2d. *Joshua Shepard*, an intimate friend and neighbor, whom Mr. B. first sent for, and hence was the first who saw the body and before it was disturbed.

3d. *Hon. Francis Seger*, a warm personal friend and attendant on his church, acted as clerk on the first inquest.

4th. *Laura E. Seger*, wife of Hon. Francis Seger. Mrs. S. washed the hands and assisted in laying out the body, was one of Mr. B's parishioners, and a warm personal friend of Rev. Mr. B. and family.

5th. *Ann Murphy*, one of the employees in the house of Mr. B. and who helped to empty the feather tick.

6th. *Jesse T. Gould*, who I think was living on very friendly terms with B. and family.

7th. *James Springstein*, a neighbor, who I presume was also on friendly terms with them.

8th. *Helen Shepard*, a neighbor, and also living on friendly terms.

9th. *Isaac Shill*, also a neighbor, living on friendly terms.

The whole of this testimony is entirely in accordance with that of the physician who was a witness for the other side (prosecution) at his last examination.

The following are the witnesses sworn for the other side (prosecution), to shew the condition of bed, body and surroundings :

1st. *William J. Olmstead*, M. D., (the only physician who saw the body at the time of death), the family physician and a warm personal friend of Mr. Budge, a transcript of whose testimony I have quoted from three different and distinct examinations.

2d. *Ellen M. Harris*.

3d. *Elmira Dowd*, who assisted to empty feather bed ; found stain on upper part of tick "2 or 2½ feet long and not quite 2 feet broad ;" a stain on the other side of it of 4 to 5 inches long and 3 wide, i. e. "about as large as my hand ;" found bloody feathers, a bunch as large as a quart measure.

4th. *Walter Whittlesey*, a neighbor and personal friend of Mr. Budge.

5th. *Caroline Higby*, a neighbor.

6th. *Matilda Gould*, do

7th. *Wilson Higby*, do

8th. *Pamelia Ride*, do

Although the second, fourth, sixth, seventh and eighth witness stated something different from all the others as to the points at which the blood was found ; still the fact that this blood could not have been thrown there by the action of the heart, and the amount lost is not changed (not exceeding two pounds); and also that no two of these witnesses agree entirely, while the description of them is so vague and indefinite as to be of no practical value. It is essentially from the statements of these six witnesses that Dr. Clark framed his statement, recently published in the *American Medical Times*, on this same case—ignoring essentially the statement of the physician and of the other highly respectable witnesses. I will therefore refer the reader to the paper read before the Academy of Medicine on the memorable evening of the 18th December, 1861, and published in the *Bulletin of the Academy*, and distributed ad libitum to the members of the State Medical Society at its last session,* when it was known that this paper was to be read—that their opinions might be biased or forestalled by this statement.

The attention with which this paper was listened to by all, attests their appreciation of its merits and truthfulness. Still

* For an embodiment of the statement of these witnesses, see Statement of Doctor Clark, as presented to the Academy of Medicine, which will be found in connection with the testimony of Doctor Olmstead.

the pregnant fact that the wound on the neck leaked from 3 to 6 ounces of fluid blood during its cleansing, so that it had to be *stuffed* with cotton bat, *sewed up*, *compress* and *bandaged* to keep it from bleeding, and still it continued to ooze blood by the side of the compress, is significant.

Four months after this, when the dissection was made, the cotton bat when removed was saturated with blood, and the parts under the neck were also wet with blood.

The night-dress was open so as to fully expose the neck and chest below the collar bone—the razor was found nearly open, and partly under the right fore-arm—about mid-way from the wrist to the elbow, and was only *slightly stained* (about $\frac{2}{3}$ of the blade), and that on the edge and not on its back—the handle had a little blood on it. The (soaked) spot of blood (6 by 12 inches) was on the upper sheet, in front of the body, saturated, rumpled and crushed up, as if it had been crowded into wound in the neck; still it had not stained the night-dress or bed-clothes with which it came in contact, (evidencing that it was placed there when nearly dry). Besides this, there were the prints of what appeared like bloody fingers on the face, and also on the lower left hand corner of the right hand pillow, and also as witness described, on the upper and middle portion of the same pillow, as if clutched with a *bloody hand*.

On the second row of the palmar phalanges of the right hand "*a slight streak of blood*"—none between the fingers or any other portion of this hand. The lady who washed the body as well as hands, said it was so slight that it scarcely soiled the wet white cloth with which it was wiped and cleaned—it appeared as if wiped against some bloody object. No blood on the dorsal surface. The *left hand* had *no blood* upon it. The straw tick, on which the feather bed lay, was not soiled with blood, nor were the boards to which it was subsequently removed, showing that the under side of the feather tick was not bloody.

The body lay with its left side to the front of the bed, on its back, a little inclined to the right—head a little more turned to the right, and deeply imbedded in the pillow, so that it came well up by the side of the ears. *Chin elevated*, so that the crown of the head was well back on the pillow, and about on a level with the back of the body. This was the exact position in which the cutting was done: *Reason*—if the head had been flexed, the cut in the larynx would have corresponded to the

center of the seventh instead of the fifth cervical vertebræ—hence, on the theory of suicide, she must have gone through all the gyrations, and then placed the head where it was at the time of the cutting. I incline to the position that the head was *in statu quo* when cut, and remained in that condition until seen by the witness. The right hand was about twelve to eighteen inches from the body, and resting on the back and elbow—*fingers* slightly flexed—*left hand* resting on the left breast, and partly flexed, palm looking upward and backwards. *Right leg* nearly straight—*left leg* semi-flexed at the knee. *Face* entirely composed, as if asleep, (as expressed by witnesses), eyes and mouth firmly closed—bed undisturbed.

The *character* of the *cut* is important. It would appear as if it had been done by one stroke of some strong instrument, and still the cut on the left side is remarkable (if done with a razor) from its dividing, suddenly, all the tissues behind, or deeper than the skin, by $\frac{1}{2}$ inch—shaving off a portion of the left transverse process—cutting through mastoid, rectus, anticus, portions of the scalenus muscle, &c., then, suddenly rising, over the vertebræ, cutting through its periosteum, and into its osseous tissue, and finally finishing on the right side, by cutting the skin $\frac{3}{8}$ to $\frac{1}{2}$ an inch further than the tissues wounded, and extending as far back as on the left side, cutting all the parts anterior to the spine, except a small posterior fragment of the mastoid muscle of the right side.

This wound would seem to have been made at one stroke, and if so, on the theory of suicide, the razor would have to be forced abruptly into the left side of the neck, between the processes, and behind the skin, cutting off the fragment of the transverse process, and carried with great force across the neck, cutting into the osseous tissue of the body of the vertebræ, and the incision finished with great deliberation, to make the cut in the skin extend beyond the wounded tissue.

On the supposition of suicide, the termination of this cut would seem more like the commencement of a surgical incision, where the proper precaution was not exercised—as to holding the instrument perpendicularly and plunging it in before commencing the incision; the skin on the left, at the angle of the cut, seemed stretched and wounded, probably from the cutting of the muscular fibre behind it, and from the forcible inclination of the head backwards and to the right.

Now upon this statement of the condition of the body, body-clothing, bed and bedding, conditions of the room, *locus in quo* of the body, the almost bloodless condition of the surroundings, the *entire* absence of "spirts and spatters" of blood, the positive evidence, as to *all* of the blood having been spilled by gravitation, the stains of blood, from a bloody hand, when hers were not bloody in a position where it could be wiped off, on adjoining objects, the entire absence of a condition indicative of convulsions in the bed, undisturbed body clothing, a condition which always accompanies death by hemorrhage, either in the sitting, or recumbent position. The entire absence of blood anteriorly on the neck, or in the direction of the long axis of the arteries; also the same on the anterior part of the body and night-dress, the continuous bleeding of fluid blood from the wound, 22 hours after death, and of its continuance, notwithstanding its being stuffed with cotton batting, sewed up, compressed and bandaged, instead of the wound being dry, and all the blood about the clothes as it would necessarily be, in death from hemorrhage—the position of the head, when found, chin elevated, so as to stretch the muscles, and turned to the right being in the same position as it was when the cutting was done—the small amount of blood lost (not exceeding a quart) as evidenced in the bed and surroundings—the almost bloodless condition of the hands and wrists—the saturated, or "soaked" spot of blood, 6 by 14 inches, on the upper sheet in front, while the clothing with which it was in contact was unsoiled—the almost bloodless condition of the razor, and its position under the fore-arm—the character and extent of the cut, involving, as it did, the bone, and last but not least, the condition of the lungs at the time of death weighing respectively $12\frac{1}{2}$ and 17 ounces, and probably much more, and leaving portions of the superior part of right lung apoplectic, while the adjacent parts were congested, instead of which, they should have weighed (on the supposition of death by hemorrhage) $4\frac{5}{100}$ and $5\frac{5}{100}$ ounces, respectively, and there should not have been the flow of fluid blood described, from the cut, 22 hours after, nor should there have been any effusions in the cavity of the *pleura*.

The chewed tongue is also important, as indicative of convulsive action. This would be inconsistent with the convulsions after throat cutting, and hemorrhage, because—1st. Animals do not chew their tongues when slaughtered; 2d. The convulsive

movements are always present in the extremities, and last from four to five minutes. If she had convulsion of the jaws, she also should have had them in the extremities, and hence the bed must of necessity be disturbed.

Now, taking all these points into consideration, we stated as our opinion, *that Mrs. Budge was dead or nearly so, when the cutting was done*; and hence, there was (little bleeding and that in the direction of its gravity), and hence, no movement of the muscles after the cutting was done. This would account—1st, for the head remaining in the same position as when the throat was cut, and the entire absence of “*sprinkles and spatters*” of blood, and the absence of evidence of the *per saltum* force to the circulation—the small amount of blood lost—the blood flowing profusely, some time after death—the condition of the right lung—the positive fluid character of the blood—the absence of positive evidence of clots of blood; 2d, *the cutting was done while lying*—is evidenced by the absence of blood on the fore part of the body, and night clothes, showing that it could not have been done in the *sitting* position. The blood simply flowing where *gravitation* would lead it and that this blood was found chiefly behind, and to the right of the body renders it almost *absolutely* certain that the cutting was done in the *lying* posture. The greater amount of blood being found on the right side is also in favor of this view, and also that the body did not move after the cutting was done—so also the position of the head, being deeply imbedded in the pillow, *chin* elevated and *head forcibly* thrown back, also the smooth and well arranged condition of the bed clothes, where they were turned down in front of her, which could not have been, had she been in the *sitting* posture.

That after the *wound* was made in the neck, the sheet was stuffed into it, and so left until nearly dry; this would account for its not soiling the clothing with which it came in contact.

3d. I hold that the throat was not cut with the razor found under the forearm, from its nearly bloodless condition, from this cut being very extensive and involving the bone. The instrument would have been covered with blood, and its edge would probably be nicked.

The small amount of blood lost, as evidenced by the condition of the feather bed (not exceeding a quart), is also inconsistent with death from hemorrhage. A person of her habit of body, and weighing 96 pounds, would have not less than 15 to 20

pounds of blood in the body, two-thirds of which, or from 10 to 12 pounds would be lost in cutting like this—and hence the inconsistency.

4th. After her death the throat was cut to cover up the *crime of murder*. This could be effected with a strong instrument, in the hand of an assassin, while standing in front of the body or on the bed, in rear of the body, or sitting astride the body. The bed could even be moved out from the wall, and the assassin go behind it, after which all things could be replaced as before the deed. In either position the *murderer* could *make just such a cut as this*, and *particularly* so if *standing in front*, with the left hand against the *chin*, the wound would of necessity be down to the right or up to the left (just as here found), while it would commence like any other surgical cut, with a tail; and if the instrument were carried across with force enough to cut through all the tissues, and into the *osseous* tissue of the vertebræ, it would be likely, when the resistance presented by the bony parts had ceased, to dive with force into the soft muscular tissue, and even into the processes of the spine, while the skin would give and stretch just as it was found to have done in this instance, so as to make the cut deeper in the tissue than the skin or vertebræ.

Even on the theory of suicide, the cutting must still have been done in the *lying position* for the reasons before detailed. Now, taking the position of the body, turned to the right, the position of the cut at right angles with the shoulder-joint, the arm would have to describe the segment of a circle, and at right angles with the body, while the fore-arm would necessarily have to be strongly flexed on the arm—also the hand on the fore-arm, in order to complete the cut. Even with all these accessories the cut could not be completed to the extent it was, before the arm would strike the bed. *The body resting on the muscles*, which would be employed in this act, destroys in a great measure their force or power; besides, no one ever cut their throat in the lying position.

The commencement of this cut is quite too abrupt for a wound made with the *blunt* point of a *razor*. The *extent* and *character* of the *tissue* cut is quite too great for one *stroke* of a *razor* to complete, and that, too, in a position where the *muscular power* is so materially impeded.

The position of the blood stains, and the direction taken by the blood when leaving the body, taking into consideration the

position of the head (and a female at that), renders the idea of suicide quite preposterous, not to say ridiculous.

The substance of this statement was transmitted to the following eminent medical jurists, who examined the facts very carefully and transmitted me their views:

The first of whom is A. S. Taylor, M. D., F. R. S., Professor of Medical Jurisprudence in Guy's Hospital, London, and well-known author of *Taylor on Poisons*, and *Taylor's Medical Jurisprudence*.

2d. T. G. Geoghegan, M. D., Professor of Medical Jurisprudence, Royal College of Surgeons, Ireland.

3d. Charles A. Lee, M. D., of this State; formerly Professor of Medical Jurisprudence, &c., &c., editor of *Guy's Forensic Medicine*, &c., &c.

4th. S. D. Gross, M. D., Professor of Surgery, Jefferson Medical College, Philadelphia; formerly Professor of Medical Jurisprudence in the medical department of Cincinnati College, and who in early life paid especial attention to the study of this important branch of medicine.

Although it is more in reference to the condition of the bed, body, and the surroundings as to blood, sheet, &c., his opinion as an eminent surgeon would be considered important and conclusive.

CHEMICAL LABORATORY GUY'S HOSPITAL, *June 30, 1860.*

DEAR SIR:—I have great pleasure in sending you my opinion of the case of Mrs. B., of G. Dr. Hendee left the MSS. and drawing at my house during my absence, so that I had an opportunity of reading it and writing out my views without having any communication with him. I can perceive that it is a case of great importance. It somewhat resembles that of Lord William Russell, murdered by Courvoisier, in London, in 1840, and the case which I have reported under the name of Harrington, in my *Medical Jurisprudence*, 6th ed., (English) p. 281.

I am, dear sir, yours faithfully,

ALFRED S. TAYLOR.

DR. SWINBURNE.

REPORT OF THE CASE OF MRS. B., OF G.

I have read a report of the case of Mrs. B., of G., who died December 10th, 1859. This report, with a drawing of position of deceased in bed, has been furnished to me by Dr. J. Swinburne, of Albany.

From these documents it appears to me :

1st. That the wound in the throat must have been inflicted while the deceased was lying on her back, i. e. in the recumbent posture. There was no blood on the anterior part of the neck below the cut, and there was no blood on the anterior part of the body or night dress. Considering the blood vessels divided by the wound in the neck, the fore part of the person and dress, if deceased were sitting up at the time of its infliction, could not have escaped receiving a considerable amount of blood.

The description of the flow of blood being chiefly on each side of the neck, is in accordance with the view that the wound was inflicted while deceased was on her back.

The head being deeply imbedded in the pillow is also in favor of this view, since had deceased sat up at the time of infliction, I do not believe that by any accidental fall such an imbedding of the head in the pillow could have taken place; and further, it is not conceivable that the head should have been thrown back as the result of an accidental fall.

2d. Taking the depth, extent and direction of this wound in the neck, it is not such a wound as a person *could inflict on himself or herself while lying on the back in a recumbent posture.*

The large blood vessels on back side of the neck were divided, assuming that a suicide might have power after dividing the carotids and juglars on one side, to carry a razor through the trachea and œsophagus as well as through the blood vessels on the other side.

I am decidedly of the opinion that there would not have been the power to shave off the left transverse process of the fifth cervical vertebra, or penetrate the osseous structure. In the recumbent posture such an act would require the exercise of a great muscular force at a very great disadvantage in the position of the right arm for using the required force.

Assuming that the incision was made from left to right, the fifth vertebra must have been implicated in the incision *before* the weapon was carried to the right side at all, and yet it is stated that in the right side of the neck there was a cut in the *skin* one-quarter of an inch further than the tissues wounded.

This fact proves to my mind a deliberate withdrawal of the weapon, quite inconsistent with the fact that the blood vessels on both sides of the neck had been divided, and the periosteum and osseous structure of the fifth cervical vertebra had been cut or penetrated.

3d. On the hypothesis of suicide a wound of this extent and depth must have been inflicted with tremendous force and with great rapidity. There must have been a sudden and copious loss of blood from the divided blood vessels of the two sides of the neck.

How came the right hand to be in a position by the side of the body only slightly bent, the weapon not grasped within it, but lying on the bed six or eight inches from the wrist? No muscular power would, in my judgment, have remained to enable the deceased to have placed her arm in this position after the infliction of such a wound in the recumbent posture; and there is no conceivable accident by which it could have assumed this posture, unless the body had been interfered with before it was seen by the medical attendant; the weapon, on the view of suicide, should have been in the grasp of the hand, considering the enormous muscular power which must have been used in an act of cutting, which involved the body of one of the vertebræ; if not in the grasp, the part by which the weapon was held should have been close to the palm.

The right hand presented only on the palmar surface a light streak of blood; the left hand is not described as having any blood upon it. Had the right hand of deceased inflicted such a wound as is described, the back of the hand, as well as probably a part of the palmar surface would have been covered with blood. The presence of a light streak only on the second row of the phalanges of the palm is inexplicable on the presumption of suicide. The weapon must have been grasped and held firmly in the right hand, hence the palmar surface might have escaped but the dorsal surface, in my opinion, *could not* escape receiving some blood from the vessels divided on the left side, and subsequently from those divided on the right side.

The spot of blood 12 or 14 inches in length, &c., on the bed clothes, and the spots on the pillow to the right have no communication with the main source of hemorrhage. They must have been produced subsequently to the wound in the neck. There is no conceivable theory by which the deceased could have pro-

duced them, or that they could have resulted from any act on her part on the supposition of suicide.

Taking the attitude of the body, the nature of the wound, and the medical circumstances in reference to the position of the stains of blood and the weapon, *I am of opinion that this wound was not inflicted by deceased on herself, but that it must have been inflicted by some other person.*

A case somewhat similar occurred to me some years since; the assassin, in this case, cut the throat of a woman while asleep, He cut off one of the cotton strings of her night cap; this was found on the floor. The microscope showed fibres of cotton in the coagulated blood on the razor.

The head of deceased was pressed backward on the pillow, and it would appear as if the chin had been raised or pulled upward at the time of the act of cutting.

ALFRED S. TAYLOR,

Prof. of Medical Jurisprudence and Chemistry, in Guy's Hospital,
15 St. James Terrace, Regent's Park, June 29, 1860.

LETTER FROM PROF. T. G. GEOGHEGAN.

UPPER MARON ST., DUBLIN, }
September 10, 1860.

My Dear Sir—I herewith apologize for having so long left your letter unanswered.

I have read your well-drawn report with great interest, and feel quite disposed to concur in the general conclusions you have drawn.

The autopsy was very well conducted. I find it impossible to understand how the division of the great vessels should not have discolored more of the adjacent surrounding surfaces with blood, unless under some such state of the circulation as you suggest, and which latter would explain the result.

The lungs also seem to have been congested, a condition not to be expected in death from hemorrhage.

I infer however, that what was found in the pleura, was serum strongly imbued with blood, rather than pure blood, as I have never seen the latter except with a wound. Whilst the bloody fluid is not unusual, as the result of the process of putrefaction, especially under the influences of gases, accumulated in the blood vessels and thus causing exudation. The absence also of more than slight stains of blood on the hand—the division of

the *transverse* process of the cervical *vertebræ* and the condition of the *tongue*, are presumptive of *homicide*.

My best wishes,

Yours, very truly,

T. G. GEOGHEGAN.

Dr. JOHN SWINBURNE, Albany, N. Y.

After transmitting to Dr. Geoghegan some tables* embodying the results of experiments, he sends me the following able and comprehensive answer :

DUBLIN, December 18, 1860.

Dear Doctor Swinburne—I feel much obliged by your attention in sending me the report of the inquest in Mrs. Budge's case, and the valuable tables embodying the result of your experiments. Some time since I wrote to you, giving you, I think, a sketch of my views of the matter—the date furnished by yourself.

I quite coincide with you as to the extreme improbability of suicide having been carried out in the present instance, and this for a variety of reasons which you appear to have estimated very correctly.

I cannot conceive in the first place, that had the division of the great vessels been the result of suicide, the circulation being ordinarily vigorous, the neighboring objects, as the head of the bed and walls, bed clothes (i. e. pillows), and doubtless the deceased's face and upper part of the neck, could have escaped being copiously sprinkled with blood; and that part of these marks should have the dotted and interrupted character of an arterial jet. Secondly, that the *lungs* should have been *exsanguined*, or nearly so, instead of *forming characters*, which lead to the legitimate inference that they were *congested* at the time of *death*. The condition of the razor blade, unstained in a great part of its breadth by blood, seems strongly also to militate against *self-murder*. I should have further expected that in case of suicide, followed by rapid death, and where the extent and character of the injury would indicate a most determined effort, the weapon would have been found grasped in the hand as it most usually is. Again, *suicide by cutting the throat* in the *recumbent* position, is *most unusual*. Nor have I ever seen or read of a case of *suicide*, where a portion of the *bone* was *sliced off*. The seat of the wound is unusual, for a suicide being commonly at one side more than the other, and generally above the os

* All of these tables will be found near the conclusion of this paper.

hyoides; these latter however are not decisive criteria. Lastly, the *injuries* of the *tongue* are very *significant*.

With best wishes, yours, very truly,

T. G. GEOGHEGAN.

Dr. J. SWINBURNE, *Albany*.

LETTER FROM DR. CHARLES A. LEE.

PEEKSKILL, Sept 28, 1860.

DR. CHARLES H. PORTER :

My Dear Sir—I am much obliged to you for the opportunity of reading your “report of the case of Mrs. B., who died under suspicious circumstances.” I have carefully read it, and given it much consideration.

It is due to you to say that it is a most *ingenious*, *judicious* and *satisfactory exposé* of the case.

The conclusions at which you arrive appear to me sound and irresistible and entirely borne out by the facts. There is not a shadow of doubt in my mind that the *incision* was *inflicted after death*, and there is as little doubt that *death* resulted from *suffocation*.

The depth and extent of the wound argue a determination of purpose and strength of wrist possessed by very few suicides—especially females, and I do not believe it possible that such an incision could have been inflicted by the deceased.

The case in my judgment could hardly be *strengthened* by any *collateral circumstances*.

If it should appear that the parties lived together unhappily it would go far with a jury to corroborate your theory.

The supposition of suicide I should not suppose could be entertained at all by any person. But even under such (*insanity*) circumstances, I should decidedly coincide with you in the opinions you have expressed in regard to the cause of death; for all the *facts* point *irresistibly* to the *agency* of *another hand*. I have nowhere read a more interesting case or one which has been more ably or logically elucidated, where the reasoning throughout is so thoroughly based on science and established principles of anatomy, physiology and pathology.

I trust you will allow its publication in some of our medical journals, as it is too important to be lost to science.

Allow me to thank you again for your kindness in sending me your report of the case.

I am very truly, yours, &c.,

CHAS. A. LEE.

LETTER FROM DR. S. D. GROSS, PROFESSOR OF SURGERY.

"PHILADELPHIA, *January 31, 1862.*

"Dear Doctor—You ask me in regard to the probable manner of the death of Mrs. Budge; whether, in my judgment, it was caused by her own act or by the act of some one else. After a careful examination of the testimony submitted to me, I have unhesitatingly come to the conclusion that she was destroyed, not by her own hands, but by those of another person. My reasons for this conclusion are the following :

"1st. It is *impossible* for any person to *cut* the *large vessels* of the neck without being *inundated* with *blood*. If Mrs. Budge had been *alive* at the moment her *neck* was cut the *blood* of the *carotid arteries* would have *spurted* about in *every* direction, soiling, not only the *bed* and *body clothes*, but also the *floor*, and probably even the *wall* and *ceiling* of the apartment. I assume that *this* circumstance alone is amply sufficient to establish the fact that she had *ceased* to *breathe* when her *tho* *oa* *was cut*. As a surgeon, I cannot conceive of the possibility of such a frightful wound being inflicted without the occurrence of the most profuse hemorrhage, even if life had been destroyed in a few seconds, and the effects of this hemorrhage would, unquestionably, have exhibited themselves in the manner above indicated. Any one who has ever seen a chicken's head severed, knows how long the blood continues to flow in a full stream from the carotid arteries.

"2d. If Mrs. Budge had herself inflicted the *wound*, her *hand*, *face* and *chest* would, *necessarily*, have been *covered* with *blood*, which, however, it appears, was not the case.

"3d. From the fact that the woman was comparatively thin and feeble, I infer that she could not (even if we suppose she possessed most extraordinary will and determination) have wielded the *razor* with which the wound is said to have been inflicted in such a manner and with such force as to shave off the left transverse process of the fifth cervical vertebræ or to divide all the structures in front of the neck, even down to the scalenus muscle. Such a wound as Mrs. Budge's is seldom inflicted by the most robust and courageous suicide.

"4th. From the position of the *razor* and from the almost entire absence of *blood* upon it, to say nothing of the *peculiar shape* of the *wound*, I cannot suppose that it *was* the *weapon* used to *kill Mrs. Budge*.

"The above facts and considerations are quite sufficient for my purpose. I leave entirely out of the question all the minor points of the case. They establish most irrefragibly, in my judgment, the conclusion that Mrs. Budge's *neck* was *not cut* until she had *ceased to breathe*, and consequently, that she was *not her own murderer*.

"How she was killed I will not pretend to affirm, but the probability suggests itself to my mind, that the act was effected by *manual strangulation*, and that her *throat was cut immediately after*. This idea derives plausibility from some of the circumstances revealed during the dissection of the body.

"I am, dear doctor, very truly and respectfully your friend and obedient servant,

S. D. GROSS.

DR. JOHN SWINBURNE.

BUDGE *ag't*. LYON.

We propose here to give somewhat extended abstracts from the evidence introduced on the trial of this now famous libel case (involving as it did the investigation of the cause of the death of the plaintiff's wife), with notes of the charge of Judge Mullen to the jury, with such remarks and criticisms as we may deem just and appropriate; not so much as a vindication of the position taken by us in the foregoing paper, as to enable the public, and especially the medical profession, after a careful and attentive perusal to properly appreciate the important medico-legal positions which were assumed by the professional witnesses for the respective parties, and by the light of reason to solve the seeming mystery surrounding the death of Mrs. Budge.

PLAINTIFF'S EVIDENCE.

For proof of publication of the libel, he proves that February 13, 1860, was the day on which the libels were sent out to various parts of the country.

Thomas Atkinson of Albany, testified that he printed the said libel for Caleb Lyon, about the middle of February, 1860, (100 copies in number).

Nine witnesses were introduced by the plaintiff, and proved the receipt by them of printed copies of the alleged libelous publication, whereupon the plaintiff rested his case.

DEFENDANT'S EVIDENCE.

EVIDENCE AS TO THE SITUATION AND APPEARANCE OF THE BODY OF MRS. BUDGE WHEN FOUND—MARKS OF BLOOD, &c.

1. Thomas Rogers (for defendant) was coroner when first inquest held; got to house between 9 and 10 day of inquest; I went into bed-room alone; a tumbler, candlestick, and piece of candle on table; * * * head on left-hand pillow; * * * chin more than usually elevated. * * * Blood had settled inside of wound. * * * The body was very cold, joints rigid. * * * Two or three stains of blood across the nose

as if the finger drawn across; walls of cut bloody, and blood settled in bottom; a little blood above and below wound, and on neck below chin; a few spatters of blood about as large as head of a pin, six or eight; the neck appeared as if blood had been rubbed with something; discovered blood in back hair on right-hand side; the streak of blood on right side of neck three inches wide, on left two inches; a lump of clotted blood at right end of cut, blood had run down under shoulder, and some distance beyond; blood under left-hand shoulder, a streak of blood on right side extending to hip, some blood under left shoulder. * * * When I first went in the clothes lay over the left elbow; sheet covered over smooth across the bed, except across the breast, it appeared to be tucked under, a strip (of bloody sheet, ?) ten inches long and four or five wide, which I pulled out and put back as it was before, about an inch visible before I pulled it out; a stain of blood on right-hand sleeve, five or six inches long, averaging three or four inches wide—wider above; the upper (part) of stain slight and not all connected, in streaks; the lower part was connected—thicker blood and deeper stain; the sleeve had been slipped up; some blood on ball of thumb, and inside of fingers, and across ball of fingers; stain on finger lighter towards ends; a little blood on hem of night-gown and wrapper, on each side; night-gown down in front, as far as top of breast, bloody; right pillow had blood on top and lower corner, marks on top as if touched with fingers; the spot on lower corner of right pillow eight or nine inches from neck, no spatters on pillow; hair back bloody nearly up to ear; the lower edges of pillow nearly even, the upper corners touched each other; pillows large. * * * The blood on sheet across the breast was dry and cracked open when unfolded; clothes at foot of bed tucked in strong; I pulled them out; no blood on walls, &c.; none on floor, looked under bed.

2. Joshua Shepherd (for defence). * * Sunday morning, 11th of December, was called to plaintiff's (Budge's) by his hired girl; it was about 6 A. M., not yet daylight. * * Found plaintiff and family in dining room. * * He (plaintiff) asked me to go into other room; he pointed towards light and wished me to take it and go into other room—pointed to parlor. * * This was all he said. Son and I went into bed-room with light, it was burning when I took it. * * Found Mrs. Budge in bed with her throat cut; she lay nearest fore side; her head on front pillow; on her back; rather inclined to the right; her head nearest further end of front pillow. * * There was a stand near head of bed; there was a tumbler with something in it on stand; candlestick with candle in it. I was in again before breakfast. * * Saw night dress on; blood seemed to run most on right side, back on right shoulder; some on left; saw a finger mark of blood on cheek and nose; no blood on dress in front. Her dress at neck stood open some 2 to 3 inches below cut. Streak of blood above cut and a little below; extended 3 or 4 inches on right side from neck; not as much on left, and did not extend as far; was more under neck. * * Blood extended only an inch or two under on left side; no spatters of blood on clothes, head board or wall; no blood on left hand; some blood on right hand inside, from middle joint to end of fingers. Blood on right arm of night-gown down by wrist; larger than a dollar considerable; no other blood on sleeve but that. The bed clothes were folded down—lay smooth. Saw blood on right-hand pillow on top; appeared to be done with bloody hand; it was nearest the head; it was as if some one had had hold of it and let go. There were 2 or 3 marks on upper sheet near breast; there was a streak of blood 2 inches wide across breast, running towards right

arm. Her head appeared settled down in pillow. * * No blood under bed; the bed clothes smooth and natural; no disorder about them.

Cross-examined. * * I did not move the body. * * Clotted blood on right side. * * Saw no blood on temples or in hair. * * There were some elongated spots of blood under her jaws. The blood mark on face was as of the finger drawn across the face; small streaks; appeared like 2 or 3 finger marks all made at one time. The streak of blood across breast was in folds of sheet. * * The mark (of blood) on right-hand pillow was about a foot from her head, and was as if she had caught it with her right hand. Saw no blood on end of right-hand pillow; pillow not rumpled except where she lay. The tucking at side not removed further than was necessary to enable her to get in. * * Bed clothes tucked in all around the bed.

3. *Francis Seger, (Judge)*—Was at Budge's on the morning Mrs. B. died. I went into the bedroom where Mrs. B. lay. * * Eyes and mouth closed, chin uncommonly elevated; bedclothes smooth; pillow raised partly on its edge; surface uneven; stains of blood on upper part of it; spots in some places darker than another; stains of blood on face and on inside of hand; fingers drawn up a little; think some blood on night-gown; around and above 6 or 7 inches; marks of blood on inside of hand less than an inch wide at roots of fingers; saw no spatters or spirts of blood; examined wall because my attention was called to it.

Cross-examined—The blood was on upper part of sleeve of night-gown of right arm; more blood on some parts of sleeve than others. The deepest part of stain was not towards elbow; the stain was thicker in one part than another; there was one stain thicker towards wrist than above it; there were marks above the heavy stain; the widest place was above the darkest part.

4. *Ann Murphy*—Helped to empty feather bed. * * Noticed blood on one side (of tick); none on under side. * * Was present when it was opened; feathers put in another tick; this was done in two or three weeks after I went there; it had been out during that time; (stain of blood,) 3-4 of a yard long, and the same width; no blood on feathers; no stains on them; was present all the time while feathers were being taken out; bloody side (of tick was) up when out of doors; the pillows were also on the fence; did not notice them; feathers taken out by me and Mrs. Dow. * * It had rained while it hung there.

Cross-examined—Think it snowed while it hung out; Mrs. Dow was there all the time feathers were being changed; Mrs. D. did not take out any lumps of clotted blood: I did not say to her I was sorry I had been deceived about there being clots of blood, and would like to correct it.

5. *Jesse T. Gould, sworn*—Went into the parlor bed room about 7 A. M. * * Her chin was rather elevated; left hand on breast. * * Clothes over elbow of left arm. * * Razor lay four inches from wrist joint. * * Streak of blood on sheet about a foot below fold; it was 2 or 3 inches wide and a foot long; bed clothes all right; no blood under bed; no spatters of blood; a little streak of blood on face as of finger marks; a little on nose and cheek; a little blood on the inside of right hand and fingers; noticed no blood on her person or night dress; a little streak of blood on lower edge of right sleeve 2 or 3 inches long; blood had oozed out of wound on right side and spread 2 or 3 inches.

On left side not as much; 3 inches from chin to the cut; partly below

Adam's apple; it turned up; no blood on neck below wound; my impression is, there was a little dead blood between the wound and chin; near upper end of right hand pillow there were marks of blood; ruffled up some; blood run under the body.

Cross-examined. * * No blood on left pillow, except round the neck. * * Blood on lower edge of night gown sleeve; not on upper; not sure; fingers bent; hand lay on its back; if blood on outside of sleeve would have seen it. * *

6. *James Springstien.* * * Reached plaintiff's house at 7 A. M. * * Went into room a number of times; was there when body was removed; saw it done; I helped; took it into parlor where it was placed on the feather bed it had laid on; body nearly straight. * * Head on left hand pillow; left hand on breast; right thrown back; the left lay on sheet; I think right thrown toward wall; razor under wrist; saw some blood on inside of right hand, on ends of fingers; razor open; saw no blood on it; saw some marks of blood on face; they looked like finger marks; they were on nose and right cheek; no more blood, except round wound; considerable blood settled close by the cut on each side; some spots of blood on right hand pillow; looked like finger marks; upper edge; 3 or 4 marks; I looked under bed and saw no blood.

Cross-examined. * * Did not appear very bloody about her.

7. *Isaac Shell*—I saw body about 11 A. M. * * Did not see much blood. * * Saw a little blood on end nearly of right fingers; no more blood on that hand. * * Saw no blood on wrist; saw some spots of blood on right sleeve of night gown; stains about $\frac{1}{2}$ inch wide; 2 or 3, from 4 to 6 inches long. * * Blood extended some 3 inches on right side; not as far on left; saw some blood on right pillow on upper side; saw some blood on sheet under her right arm, extending to her throat and cut in the throat. * * No blood on her person, except on her throat; no other blood on her clothes; none on bedstead: a little blood on sheet, which crossed her breast, where it was folded; a blood stain on one of her cheeks as if touched with end of her fingers.

Cross-examined. * * Very little blood on razor; could not say it ran on razor; it appeared to run towards edge and dry there; there was a little clotted blood close to her neck; the blood settled under her arm.

8. *Laura E. Seger*, (wife of *Hon. Francis Seger*.)—Was at plaintiff's day of inquest; got there about ten o'clock A. M. * * Saw spot of blood on sheet; eyes and mouth closed; I washed her right hand; there was a stain of blood on three fingers, on the fleshy part, between the first and second joints, and on thumb, near ball of thumb, and a stain across between points below; no blood on palm of hand; a stain of blood on nail of fore finger next to flesh; can't say on which hand; blood ran over back side of right shoulder; * * the knob of hair back (of head) was saturated with blood; none in front of ear; noticed wrist of right hand, no blood on it, or arm; * * noticed no disturbance of bed clothes. * * I assisted in removing night clothes.

* * I saw a pillow under her head; it was not bloody as high up as her hair; edge of it under her head; was bloody; no blood on her dress in front, or on her person. * *

Cross-examined. * * I took down the rolls of hair; don't know whether they were washed; cut off hair behind because it was bloody; could have washed it: hair smooth; put up with pins; no comb. * *

We deem proper here to insert a portion of the testimony of the witness, Mrs. Seger, as given before the coroner, because, in some respects, it is more clear and definite as to the appearance of the body when found than that given by her on the civil trial.

On her examination before Coroner Rogers, Mrs. Seger testified, among other things, as follows:

"The bed clothing lay smoothly on the bed; and turned over at the top, as we usually make a bed. * * There was no blood upon her chest; none on her neck below the wound. * * No blood upon the left hand sleeve of the night dress, or upon her arm; there was blood upon the right hand, on the inside on every finger—just a trace of blood on every finger. * * No blood upon the outside of the right hand; no blood upon the right hand sleeve; none upon the wrist. * * Washed the right hand with a white cloth; the cloth was stained some with blood; not a great deal.

Cross-examined—The blood had ran up from the roots of the hair about three inches; there was no blood upon the side of the head on the hair; it extended towards the ear; it had spread some. * * No blood on the right arm, from the elbow downwards; there was very little blood on the right hand; a slight trace across the fingers on the inside of the right hand; not so wide as a finger, but wider than a knitting needle; wider on some fingers than others; do not remember which joints the blood was on; think it was on the first joints, next to the hand; there was but one line across, but was not continued between the fingers. * * On the ball of the thumb, near the roots of the thumb; I saw no other blood on the inside of the right hand; there was no blood on the outside of the right hand; I made the examination for the purpose of cleansing it. * * The blood ran down from the neck; back of the shoulder; none on the front part of the shoulder; no blood on the neck below the wound in front; a space two or three inches from the neck on the pillow, where the head lay, was covered with blood." * *

DEFENDANT'S MORAL EVIDENCE.

Joshua Shepard, of Greig, Lewis co.—Knew Mrs. B.; lived at a distance of 15 or 16 rods from her house; first knew plaintiff in July, 1859. * * On Sunday morning, 11th Dec'r, was called to plaintiff's by his hired girl * * about 6 A. M. * * not yet daylight. * * Went immediately into room with his son, whose name is Eli; found plaintiff and family there (dining room). * * He pointed to light, and asked me to take it and go into other room; pointed to parlor. * * This was all plaintiff said. * * Son and I went into parlor bed room with light; was burning when I took it. * * Found Mrs. B. on bed with her throat cut. * * I told son to go after neighbors; I returned to dining room, and said to plaintiff, *she is dead*, and I think he said, *Is it so?* He then asked me if I saw any instrument *she killed herself with*; I said I did not look for any. He said, *probably a razor*. His little girl said she would go and see; she went to the pantry and took down box, and said, "Pa, there is but one here!" He said, "There ought to be two." He asked me to go back and see what instrument *she killed herself with*. I said I would rather wait till neighbors came. Adam Shell came in first, where plaintiff and I were; I told him plaintiff wanted me to go and see what she killed herself with, and we went and found a razor under her right arm, half way between elbow and wrist. * * There was a tumbler with something in it on stand; candle stick with candle in it. * * Mrs. B. was

at my house sometimes once a week, and sometimes once in two weeks; she was at my house the night before she died; she left at about 8 P. M. She appeared as usual; conversed freely as usual; she was considerable of a talker. The funeral was attended Tuesday; plaintiff at my house Tuesday evening. * * He said he had to remove from one place to another on account of his wife; he had to shift on account of her. He had lived at Bellville, Canada, Camden and Smithfield. Before Higby came in, he took up his little child and said, "Now if he had the means he could go on and educate his children to his mind." * *

Cross-examined. The hired girl came to my house and said Mrs. B. had cut her throat; and B. had told her to come in. * * Found plaintiff and family in room. * * huddled together and all crying loud. He motioned to parlor; nothing said. * * When I came from bed room, found plaintiff as I left him. * * Budge and I did not meet often; he and I were friendly.

Emma M. Gould—Lived in Greig when Mrs. Budge died; $\frac{1}{4}$ of a mile from plaintiff (Budge). * * Was well acquainted with Mrs. B.; called frequently during summer and fall; was at plaintiff's morning of day before she died. * * Mrs. B. gave me a letter to give to our hired man to carry to post office, directed to Mrs. Lonsdale, Plymouth, England; her daughter Priscilla was present. * * The same evening plaintiff called at our house about 6 P. M. * * Plaintiff asked me if Mrs. B. had given me a letter; I said she had; he asked me if I had sent it; he said he was glad, and he wished to be allowed the letter; I got it and gave it to him and a quarter of a dollar she gave me to pay postage. He said "it is hard to take a letter my wife had written, but I am obliged to do so." He said a short time since he had received some verses from his niece in Canada, with music attached, that he left them on the table in his study; Mrs. B. found them and said he received them from his lady friends; he told her he had not; she could not believe him. He thought that the verses were undoubtedly in the letter, and that she would use them with her own composition, in order to misrepresent him. He said, "My troubles have been as they are now for 11 years, and were it not for my children I would not endure it for six hours." He took letter; held it until I saw Mrs. Budge was coming; then he slipped it in his side pocket; I said, "Mr. Budge it is a lady passing the window;" as she passed second window I saw it was Mrs. Budge, and he said, "I warrant it is." I then said, "Mr. Budge, what shall I say to Mrs. Budge in regard to the letter." He said I had better say I had sent it. Then as I arose to open the door, he said, "you need not say by whom." I opened door; Mrs. B. came in; she responded, good evening. She said, "I did not know Budge was in;" he said, "Yes, I came to see Mr. Gould about a man to thrash for me."

Conversation general.—She asked me if our hired man had gone to post-office to Falls; I said he had; she asked me if I had sent her letter, and I said I had; she said "I thank you; I am very glad you sent it; it is a very long time since I heard from my sister (Mrs. Lonsdale); it is such a task to get a letter from her sister, or relations;" I can't say which; mother asked her if she enjoyed good health; she said she was very well, excepting her head; mother said she knew how to sympathize with her, as she had a headache; she then said, "the headache and hard labor I could endure, but I have such a strange feeling in my head; if it was not for my little ones, I could not wish to stay." * * When I

said the letter had gone, mother said, "yes. Mrs. Budge, it's gone;" she was never accustomed to labor till she came to America. * * Nothing unusual in her appearance except when she first came in she appeared excited; more composed and cheerful when she found her letter was gone. * * She said in the summer, "I have been accused of a falsehood, but my heavenly father knows I could not tell a lie; I am a stranger; I have no mother or sister to soothe me when sick. * But I am not a stranger to my father in heaven." She said *wealthy young ladies* could do things which if a poor girl should, people would be surprised; but wealth was of very little consequence, for there would be a day when both rich and poor would be brought before their God and her God, and he would judge them judiciously.

Helen Shepard—Live in Greig; knew Mrs. B. ; she came 3d or 4th July; I did the dining work for the first three weeks after she came to Lyons Falls. * * I don't remember of plaintiff and his wife speaking together but twice; once he introduced me to Mrs. B, and the other she spoke to him about fire; he talked to me about his wife. * * He said Mrs. B. was sick again. * * He said she would write letters that injured her as much as him; she came up to his room in the night and kept him awake; sometimes she acted so bad he thought of calling Shepard, and if he did not see what rest of family ate and drank he would be afraid of being poisoned; she said if she had pistol she would shoot him; he said people could like her at first but when they got acquainted with her they could have nothing to do with her. * * She had locked him out of doors; he said she had treated him so that he had lost all affection for her; the ties were broken; he said she was a sweet woman and capable of going in the best society, but there was such things going on at his house she was not fit for decent people to associate (with); she was only fit for (the) "*five points*;" he said if it was not for his children he would not endure it; "there is my Henry, young as he is, would almost weep tears of blood over me and say, 'Pa, why don't you send her away?'" (when) I (first) went over to plaintiff's *she slept in dining room bed room*; found her there early in morning; youngest child 2 years old; she slept with her mother; there was a crib in the room in which little Mary slept; I had a letter for Mrs. B.; defendant offers to show that B. opened a sealed letter, read it and put it in his pocket, and it was not delivered to the knowledge of the witness; this was when Mrs. B. was sick abed, and that the letter was postmarked England; I gave letter to Mr. B.; it was sealed; he put it in his pocket; he read it; (saw straw bed; there was no stains on it; looked to find them.) * * She was sick in July about a week, and not again till 13th Sept.; she was about house the following Saturday, again the week before her death; in Sept., on Friday, he gave me what he called Indian hemp, and to give her 15 drops; she had taken as many as 30 drops; she said it was not the right medicine; she spit some out; swallowed some.

Frances M. Hess—I lived in plaintiff's house the last of August or first of September. * * * The first thing that attracted my attention was the day I first went there; he came home about 5 P. M., and retired; he passed through the room up to his study; he came down soon after, she did not speak to him; they took tea, and they did not speak; after I went to bed I heard an altercation between him and her; I slept in chamber over dining room; he and his wife were in dining room; he, I was told, slept in his study; he asked her that night why she went to

Nova Scotia and staid four months, and he knew not where she was; he spoke in a very excited tone; she low; he said her object had been to torment and make him miserable, she replied; could not understand what she said; he soon said, "you had, and you know you had;" Jenny and Mary slept with Mrs. B. * * * The days I worked there he gave (her) Indian hemp; I saw no doctor there. * * * *

Mary Ann McMullen. * * Knew Mrs. B.; I lived there when she died; went there to live the Tuesday before her death; left there Sunday evening after death. * * * I slept up stairs; I went to my room from dining room, I slept alone; the girls slept in dining room bedroom; the boys up stairs over dining room; they went up from kitchen; I went to bed Saturday night about 8; I left plaintiff and Mrs. Budge, Priscilla and Henry (up); the next morning plaintiff called me; plaintiff was in dining room when he called; when I first came down I made the tea for her as she had directed me on Thursday or Friday; *this was the first time I made it*; it was carried into her room by Priscilla; when I made the tea B. was in his room up stairs; can't tell when he went up; when Priscilla went in she came out screaming, and B. came down and asked me what was the matter, and she said her mother had cut her throat—all in kitchen; then B. told me to go over to Shepard's and tell him to come over; B. was in kitchen from (the time) he came down till I went out; Shepard came with me; Mrs. B. went to Gould & Shepard's that night (before she died). * * * Brought back some patterns for children's clothes; she cut out some factory cloth by pattern, and I took back pattern; Mrs. B. very cheerful; went and got me a book to read; she showed me about pictures, and told me about the stories; nothing unusual in her appearance after she came back; I heard talk between Mrs. B. and children before she went to Gould's; Priscilla and Henry were talking about a letter that her mother had written and given Emma Gould, and Mrs. B. came from dining room and asked what it was all about; she said it was a poor thing she could not send a letter to her sister without it being stopped.

Cross-examined. * *. * When Priscilla came from Shepard's she spoke to her about telling her father about letter. * * * The fire was lighted when I came down; Priscilla, B. and self were the only ones up when she came out of room (where Mrs. Budge was found dead).

Delia Shepard. * * In August, in the morning at table, B. came down and sat at table; one of children said, "I did not know Pa came home last night." Mrs. B. said, "your Pa did not get home last night; he came this morning." He said he got home night before about ten, and couldn't get in. She said she did not hear him. He said he knocked so that Shepard's folks could hear him. She said she woke very easy, and he said, "I know you do." She spoke of a letter he had received from a young lady; she said every young lady in the place should have a copy of that letter. He said, I don't care if you give four score young ladies a copy. * * *

Cross-examined. He said it was not the first time but it must be the last time he was locked out of his own house. B. said he was not willing to have his children present on such an occasion. * * I remember inquest day she died; I was present some of the time; I was examined. I went home and found B. at father's.

When I entered sitting room, he said, "*Delia, what are they doing over there? are they trying to get anything against me?*" I said, "Yes;

they spoke of quarrel at breakfast table." He said, "*Just as I expected.*"

* * I was examined at Rome; I know he asked me, "*Delia, what are they doing over there? are they trying to get anything against me?*"

Direct. After this occasion Mr. B. said she was up till ten o'clock (the night of her death).

James Springstein. * * B. came to my house in August, 1859.

* * He says, "I wish to say something to your woman about something she has said about me. I heard that she said I was running about where I had no business, and representing me as a bad man." She told him she knew nothing about his business; had heard nothing about him. He said, I believe what you say; I am satisfied, and said people had occasion to talk. He said trouble had begun between him and his wife soon after they moved. He had spent much money taking her back to England, and she came back again; had disturbed him; followed him when he was away from home. He said he was at Lyon's; that he and Mrs. L. was at room, and she looked out and saw a female in the yard. He looked, and said it was Mrs. Budge, I will have to go. *He said he had not lived with her as a companion or as a husband, and never should again; that he had moved and moved, but never should move again for her; but would try one thing more.* He said she was going to mend his coat, and found a letter in his pocket, and she represented it a love letter; but it was not, but a friendly letter from an elderly lady, and he caused it to be destroyed. When he got through, I said to B., "Look here, my dear fellow, we can't always tell men when they come into our neighborhood; we sometimes get deceived by preachers." Told him of several clergymen who had done wrong; and he asked me what did they do with Avery, and I replied, his friends cleared him.

Hannah Springstein—Knew Mrs. B.; first knew her in July, 1859.

* * Called at my house some four times in all. * * He came to our house; she generally talked over religious matters. * * He (B.) said to husband, I want to ask your wife a question. Husband told me to answer, and to say if I had said anything against him. I said I had not. He said he felt satisfied. He had a great deal of trouble with his wife, commencing soon after marriage—jealousy Folks had talked, and had occasion to talk. He had *moved and moved, but should never move again for her; he should try one thing more; had no affection for her. Had not lived with her as a companion in several years, and never should again.* She said she had found letter in his pocket, which she called a love-letter, and he had destroyed it. He said it was from an elderly lady. He said when first married she was a very nice woman and any young man might be proud of. * * *

Cross-examined—When B. was at my house he said it would be no satisfaction to you to call at my house, unless you join her in her conversation. * *

Adam Deitz, postmaster of Greig, Lewis county—Plaintiff was at my office in the morning of October 1859; had a talk with him about his wife; he said he had a good deal of trouble with his wife; she was of a jealous disposition; defendant offers to show that the plaintiff (Budge) went to the witness' office and withdrew a letter mailed by the wife (Mrs. Budge); and also to show that he told the witness that he had frequently intercepted her letters; the plaintiff's (Budge) counsel concedes that defendant may prove that the witness withdrew letters to her friends. The objection is sustained unless it is shown that the letters intercepted were addressed to her friends.

Catharine S. Dwight—Lived in Adams, Jefferson county in 1857 and 1858; lived in Belville; knew plaintiff and his wife. * * Budge was pastor of our church; my husband was elder of it; first knew them in 1850; he then lived in Smithville, Jefferson county, six or seven miles from Belville; he lived near there; I lived in Henderson, four miles from the church; I was (then) unmarried. * * Can't say whether he was there 1 or 2 years; think he was at Rutland, Jefferson county, some 20 miles from Smithville; he returned to Smithville; was gone 3, 4 or 5 months; he went to Camden, Oneida county; saw plaintiff (Budge) occasionally when he came back from Rutland; he came to Belville in the fall of 1857; in Belville he lived about 50 rods from our house, with his family. * * Her youngest child was born in Camden, and was six weeks old when she came to Belville; she was sick at Belville in 1858; I saw Mrs. B. every day or two after she came, and up to her sickness; she was sick two weeks and then he took her to Canada. * * B. boarded at our house until 4th June; was in Kingston. * * Left for England about 1st of July; he returned to our house 28th August. * * He continued to preach at Belville; saw his wife at our house after her return from England in 1859. * * After he returned from England he boarded at our house till middle of next February; he left, saying he was going to Lyons Falls; before he went to Canada with wife, had a talk with him; he said he "was having a great deal of trouble with his wife; always had a great deal of trouble with her; they commenced three weeks after marriage; she was very jealous of him; she annoyed him in various ways; he felt as though he could not endure it any longer; he thought he must avoid it by a divorce or in some other way;" he said "she had been the means of his removal from places where he had been; he thought he would take her to her parents in England, he could live with her no longer, and say to her father he must take care of her;" I told him I always supposed that they lived happily; considered her a very superior woman; prayed him to be reconciled and told him instances in which I thought she was more considerate of him than other women; I told him she had told me that when she was sick she had stand and flat iron brought and she ironed collars for him, as he was particular and girl could not suit him, even when she was unable to be about house; I was at her house and she wanted me to prepare something nice for dinner; she did not care for herself or children, but wanted something nice for him; I did it and she seemed to enjoy it; I begged him to look the subject over and be reasonable to her and live happy; he said he thought he never could; he tried to live pleasantly with her but could not; he told me her father disowned her on account of her marriage; that her father was a man in high position, wealthy; she was well educated and moved in high circles; after he returned from England he told me of an affair that happened in his study; he said she had been troubling him in his study; he became *enraged* and *put his hands on her shoulders to push her down stairs*; but thought of *consequences* and *desisted*; he spoke of his trouble frequently; he said that after he returned from England *he was often tempted to do something desperate*; he said in case she should return from England *he would be tempted to go to Sandwich Islands or some where where he would never be heard of*; he told me he received a letter from England saying his wife was very sick, and another might bring announcement of her death; he felt sad to live with a companion in such way; that if he should hear of her death *he could not mourn for her*; *heard him speak of a divorce twice*; he never intimated she was not

chaste; I was with Mrs. B. quite frequently; often when she and he were at home; they were both at my house together. * *

Cross-examination. * * Saw nothing in his conduct as a husband that was objectionable; he did not go with his wife visiting. * * I saw him then at my father's 3 or 4 times. * *

D. Alton Dwight—Live in Adams, Jefferson county. First got acquainted with Budge in 1850; married in 1854; in 1857 knew B. in Belleville; was an officer of his church while he was there. Our family was very intimate. I knew she (Mrs. Budge) had to work very hard to take care of her family; had a great deal to do; had a young child (six children in all); part of the time without a girl; my father was a physician. * * Saw Mr. B. and her soon after she returned from England. * * In May, 1858, had a talk with Budge a short time before she went to Canada, at my house. He said he lived very unhappily with his family; he felt he could not endure it much longer, he must be separated from her *by some means*. Myself and wife remonstrated against such a course; I told him how people would not endure such a state of things. After he returned from England, went to Watertown with him; he stated difficulties he had in his family, commencing soon after marriage and continued at intervals ever since. * * When he returned from England he said she came into his study to annoy him, and he took her by shoulders to push her down or get away from her some way; the thoughts of the consequences deterred him from doing it. * * *He said he had often prayed he might not be left to do some awful thing.* He said she had often annoyed him so that he would have to get up and walk the floor, and his head would feel as though it would burst.

He said when in Canada he offered to carry daughter of one of his parishioners to her friends, and his wife objected. * *

He said his niece came to visit him in Rutland, and he took her around amongst his parishioners, and his wife made a fuss about it (and girl felt so bad about it that niece left and went to Canada).

He said she thought at a party that he treated other ladies better than he did her, and she was so displeased about it that she treated the ladies so that he had to leave.

At one time he wanted to go to farm, and she did not want him to, and took hold of him and told child to call daughter to come and hold him. (He frequently said he would go to Sandwich Islands or somewhere where his family could never hear of him.)

He was complaining of being absent from his family, and I said (he said) he was happier without them, and he said *it was so*.

Mary B. Lyon—Live at Lyons' Falls; knew plaintiff; I am a member of his church; became acquainted with B. in 1859 at my house. * * Made it his home there until his family came. * * Had a little talk with him before his family came from England; he said he did not know as he ought to have taken charge of the church; he was anxious about her (Mrs. B.) state of mind or feeling when she came back. * * that it was difficult to counteract her feelings when she was in this peculiar state of mind; he said he had then trouble from her friends in England and told them he could not live in such a state and take care of his family; he said he could not live with them (her) as his wife in the state he had been; he said his life was so nearly crushed out of him he could not tend to his duty * *. He told them decidedly he could not live with her as he had done and take care of his family; he said it was

owing to her yielding to her jealousy, and stated how it developed itself; Budge and his wife called on me several times; they came to my house three weeks after she came; I called my daughter Mary; she was then seventeen; she (Mrs. Budge) said Budge had written a letter to Bellville with improper things in it; she said your daughter was writing to Budge what was not proper; I thought not; I called Mary and told her she should speak for herself, and requested her to bring a note which I knew she had; it was shown Mrs. B.; she said there was nothing wrong in that, and she must have written something else; Mary said not, and Mrs. B. said she had; it was of an improper character.

I asked Mrs. B. why she did not bring it to me if she had anything in her possession of an improper character; and if improper, it would receive my attention at once; I asked her if she remembered what it was, and she said it was all about love; I asked her for the language, and she said that it said she could die for him; think she said she found it in his pocket; then Mary said, why Mrs. B. I would not do such a thing—never did such a thing in my life; I asked her why she burned it; I said, it enables you to make the charge, and we cannot refute (it); you ought to have brought it to me; B. says to her, "you have access to all my letters; I have left them so you would not be uneasy; I have left my letters when written so you could read them; you have burned all my correspondence, so that I have not half dozen letters of my correspondence in twelve years;" I told her it was wrong for her to take that course; B. said he had written letters to a friend of hers at Bellville, and had left it on table so she could read it; and "why do you burn it up?" she said she burned it up because there was sentences in it which were improper; I said to her, if it was the case, and should find in her letter or letters to him that was wrong, I should keep it; not let it be destroyed; I said if she developed so on me I could not respect her as I otherwise would; I told her our interviews of that kind would not be pleasant; had none with her after that. * *

Re-direct—I attend his church now. * *

The following persons for the defence testified as to the general bad character of Mr. Budge:

Alexander Row, of Bellville—in whose house plaintiff lived in fall of 1857.

Q.—What was his general character previous to Feb. 10, 1860.

A.—*Bad*.

Leonard Kennedy, of Bellville.—Knew plaintiff when he first came in 1857; my acquaintance with B. was as pastor; I was member of the church, part of the time elder; prior to February, 1860, Budge's general character *bad*.

Nathan Chamberlain, of Ellisburgh.—Knew Budge; knew him first in 1857 in Ellisburgh; knew him in Bellville; former character prior to February, 1860, *bad*.

Almanzor Converse, of Ellisburgh.—Am member of Presbyterian Church, Bellville; deacon and elder in it; I attended church while B. presided there; character *bad*.

Virgil Warne, of Ellisburgh.—Knew plaintiff; got acquainted with him immediately after he came to Bellville; I was a member of his church; his general character *bad*.

Harlon Buck, of Leyden, Lewis county.—Know Budge, and have since 1858. * * *Character bad.*

Walter Higby, Port Leyden, Lewis county—Knew Budge, and have since spring of 1859; lived four miles from him; *his general character is not good.*

Thomas Rogers (coroner,) Lyons' Falls, Lewis county.—Have means of knowing general character of Budge before libel; *it is bad.*

Andrew Thomas, Leyden, Lewis county—know Budge by sight; have means of knowing his character to some extent; *it is not good.*

Nelson Barknap, of Greig, Lewis county—(Live) 6 or 7 miles from Budge's house; have means of knowing his general character; *it is bad.*

Newton Northam, of Leyden, Lewis county.—Know plaintiff, and have since 1859; was member of Congregational church at Port Leyden; knew his character; *it was bad,*

Henry Northam, of Leyden—Attended Budge's church 8 or 9 months; am a Methodist; his general character up to fore part of February, 1860, I should judge *it bad.*

Isaac Shell, of Collinsville, Lewis county—Sold farm to Budge. * * Had dealings with him; *his general character bad.*

Jesse T. Gould. * * I was at home on the evening Budge came there (to my house;) * * He then asked my daughter for letter; she said Mrs. Budge had given her a letter, and he said if not mailed he should like to get it; he said it was hard to intercept a wife's letters, but he was obliged to do it; he had endured those troubles for the last 11 years, and if it were not for his children he would not endure it six hours; told girl to get letter and give him; she got letter and piece of money and handed to him; daughter said Mrs. B. was passing; he said, "I warrant it is;" daughter says, "what shall I say I have done with the letter?" and he said, "tell her you have sent it;" Mrs. Budge came in, and said, "I did not expect to see Budge here this evening." * * After Mrs. B. sat down she turned to Emma and asked if letter had been sent, and Emma said yes; wife said, yes, it is gone; Mrs. Budge said she was glad of it; it was so much trouble for her to get a letter to her friend. * * She said she was troubled a good deal with her head feeling so bad; wife said she had headache; Mrs. Budge said it was not headache—that she could endure; she spoke of Budge's being gone so much. * * Budge started (for home) saying nothing to Mrs. Budge; went to Budge's Wednesday or Thursday evening of the same week; Budge in dining room; asked him how his wife was; he answered me; I said it was a hard case for a person to be in that condition referring to; he said *he did not consider her crazy*; she would take one mistaken idea and look at it until she would become distracted; he said *her last sickness was caused by his being out rather later than usual, and she said she would not sleep that night and he should not*; she kept him travelling from room to room; that she threw the candlestick at him, and kept it up until 6 A. M. ; then she got so exhausted that she lay down and got an hour or two of sleep; he said such a state of things could not be endured always; he said he never would have taken that mission if he had supposed she was coming back from England; that these things did not affect him in Bellville as here among strangers.

Cross-examined.—After Mrs. Budge said it was the strange feeling in her head, she added if it was not for the little ones she would not wish to stay; she said that the noise of the children troubled her; she wanted Budge to send them to school, but he would not; she said she only cared for her children, and if it was not for them she would not care to stay.

PLAINTIFF'S REBUTTING EVIDENCE.

The plaintiff, Mr. Budge, called a number of witnesses to sustain himself upon the question of character, the substance of whose testimony was, that they considered his general character good, and had heard nothing against his moral character, previous to the publication of the alleged libel.

*William J. Olmsted,** physician and surgeon—Saw body; it was in parlor bed room; I was there; I was sworn on the inquest, and at Rome. * * There was blood in the wound; it was clotted. There were small clots inside the wound; head a very little turned to right, and a good deal imbedded in pillow; blood on both right and left sides of neck; right hand bloody; considerable blood on sleeve of right arm; some part of sleeve very bloody; as it went towards elbow lighter; presented a matted appearance; it extended to elbow. The upper spots on sleeve looked like soaked spots; think they extended above elbow; did not cover the whole surface of the sleeve; stains of blood across fingers, between second and third joints; some on ball of hand. It was my impression there was blood between the fingers as far as I could see between them; some spots of blood on sleeve presented round appearance; some from size of five cent piece to a quarter; some were oblong or elongated; the blood had flown down under the right shoulder and toward right sleeve; the spots were elongated toward elbow. * * There was blood on neck above and below wound and on chin; blood was on neck below wound an inch or two; some blood on binding of under clothes; cannot say which garment. * * Hair behind very bloody; bloody by her twist, i. e. knob back of head; clotted blood on each side of wound, particularly on right, and extended from 2 to 4 inches; it was a clot of blood.

There were specks or spatters of blood on the face; where located cannot say; most very minute; some round and some elongated. * *

Cross-examined. * * Not certain as to blood between fingers of right hand; saw no blood on left hand nor on night gown. * * Cannot say positively there was any spots of blood beyond 3 or 4 inches from the neck. * * Spots on face small; size of shot. Blade of razor not entirely covered with blood; think as much as 1-3 from edge up; blood extended from wrist of night gown 4 to 6 inches, and I now think more. * * Bed clothes smooth; considerably more blood on right than left side of neck. * * Discovered blood on upper sheet 4 to 6 inches wide and 10 inches long, in front of person.

On this his seventh examination, while being examined on the re-direct, Dr. O. remembered that while the feather bed was being carried out by two

* On the trial of the slander suit of the Rev. Henry Budge against Hon. Caleb Lyon, previously spoken of, the family physician was again sworn. This time however he was subpoenaed by the plaintiff Budge, and hence becomes witness for him. I will, therefore, quote all he says, as taken from the notes of the presiding Judge (Mullen) verbatim, as far as they refer to the medical points in question.

persons, he "placed hand under part that sagged most, and my hand was stained with blood."

Now it will be seen that there is little variation in this statement, and that it is essentially the same as that laid down in this paper, and notwithstanding some effort was made to show more blood, it fell short of the mark—since it could not be proved that any blood passed through the feather bed, as was evidenced by the straw tick and boards to which it was subsequently removed—one side of feather tick only was bloody, showing that the blood had not run through, and there was no bloody feathers in the bed except at most a clot of blood and feathers as large as a quart mug, and a small stain on the lower side of feather tick.

Instead of giving all the medical evidence for the prosecution, I present that of Doctor *Olmstead*, and refer the reader to statement of Dr. Clark, as to the condition of Mrs. Budge's body, bed, and body clothing, stains of blood, &c., as presented to the Academy of Medicine, Dec. 18th, 1861. It is as follows:

"A woman is found in her bed of a morning with her throat cut, lying upon her back, a little turned to the right; her head turned a little more in the same direction than the body. A considerable quantity of blood had flowed from the wound upon each side of the neck; most upon the right. She was lying on the left hand pillow near its right extremity. There was sprinkling of blood to a limited extent; some upon her face, in the curls of her hair, on the right hand pillow at a distance of about two feet from the wound, and on the left hand pillow at a distance of nine inches to a foot. The knot of the hair at the back of the head was saturated with blood, clots of considerable size were found along the right shoulder, and blood had flowed down to the hips and had entered the feather-bed, so as to saturate a considerable spot at this place, i. e. in the position of the hips, causing a sensation of weight to the hand placed under the bed, and moistening the hand with blood.

The quantity of blood lost could not be accurately estimated, but the bed, after it had been exposed to the rain* and weather for several weeks, still contained a coagulum with feathers which was compared in size to a duck; another coagulum was found in the feathers of the left hand pillow about the size of the fist. One or two clots, compared to the size of the two hands, were found upon the surface of the bed. A spot of blood about nine inches in length, and of less width, was observed upon the sheet turned down over the body near to the hips; and some spots of blood were noticed in the blankets under the sheet.

The right hand was lying by the side, the arm somewhat bent at the elbow, and the hand at a distance of about six inches from the hips. Under the wrist and hands was found a razor, partly open and partly covered with blood. This hand was bloody, but not covered with blood, more in the inside than on the back of the fingers.

On the left hand a few spots of blood are described at the ends of the fingers. The curls which had been put up for the night, were not ruffled or in any way disturbed. There was no scratch, or abrasion, ecchy-

* Any one familiar with a northern winter knows full well how little rain falls in December and January; there is a little rain, but not enough to wet a feather-tick hanging astride a fence; and if wet through it would only have diffused the blood instead of leaving all the feathers but the clot entirely unstained with blood.

mosis, or other mark of violence upon the face, hands, or any part of the body, except the cut already referred to.

There were marks of bloody fingers on the face, described as if beginning on the left side, and drawn across the nose, but so vaguely described, that it could not be determined whether they were made by the right hand or by the left. Marks of bloody fingers were described on the inferior and left corner of the right hand pillow, and also on or about the middle or centre of the same pillow. When, however, the pillow tick, produced in court, was seen to be sprinkled with blood at about the same spot, a question was raised whether these latter marks were produced by sprinkling or by the hand.*

The woman had not removed her drawers or flannel petticoat, and the night dress was turned down from the neck. Little or no blood is described as seen on the chest below the upper edge of the flannel dress, which was under the night gown.

The cut in the neck was five inches and a half in its curved measure and three inches in its direct length. It began on the left side at a point nearly opposite the cricoid cartilage upon the sternocleido-mastoid muscle near its posterior border, passed directly inwards towards the centre of the neck and in the line of a radius from that centre to the depth of about three-quarters of an inch; it then swept over the fifth cervical vertebra, shaving off a small portion of the transverse process, passing over the body of the vertebra, penetrating its covering and making a slight impression upon the bone itself, and from that passing out in a direct line on the right sterno-cleido-mastoid muscle, cutting the inner portion of the muscle, and extending half an inch in the skin beyond the parts of the muscle cut—in other words passing outwards nearly in a direct lateral line. The left extremity of the incision was three and one-quarter inches below the lobe of the ear, and the right extremity three and one-half inches below the corresponding point on that side. The cut had severed the cricoid cartilage and all the muscles in its track, together with the deep jugular vein, the pneumo-gastric nerve, and the carotid artery on each side.

The bed was four feet and four inches in width, and stood in the corner of the room, so that the head of the bed was against the wall and the right side of the bed also against another wall. The room was about seven feet wide and nine feet long. In the space between the bed and the wall on the left side, at the head of the bed, was a stand about two feet and one half in length and eighteen to twenty-four inches wide, on which were found a tumbler, vials, and other furniture in order and undisturbed. The cut appeared to have been one incision.

Two important facts are yet to be stated. The right sleeve of the night gown, buttoned at the wrist, was bloody on the part looking toward the body. Between the wrist and elbow a part of the sleeve was "soaked" with blood, and near the elbow was a sprinkling by drops, which were elongated towards this joint.

The other fact is this, while women were "laying out the body," one of them lifting the arm of the dead person, saw bloody froth or rather

* It must be remembered that these pillows remained in the possession of the prisoner and when the second inquest was made nothing was said of them, and when it was found that blood stains were of some importance, a pair of pillow ticks were produced in court. They suddenly find, after the expiration of nearly two years, that when "the pillow tick, produced in court, was seen to be sprinkled with blood about the same spot," (as mark described as of the bloody hand,) the question naturally arises, who sprinkled them with blood? evidently it was not found there at the time of the death of Mrs. Budge, since all the reliable witnesses agree that there were no stains of blood on the right hand pillow except such as would be produced by being clutched with a bloody hand.

large blood bubbles rise from the trachea into the wound. Interested in this occurrence, she again lifted the arm with the same result.

A coroner's inquest was held, and the woman was buried under the verdict of suicide. Four months after this, on the 10th of April, 1860, under the suspicion of murder, her body was exhumed and a post-mortem examination made. The body was found in a good state of preservation. The lungs were reported as congested and engorged with blood. Bloody fluid was found in each pleuritic cavity, estimated at five ounces on the left side and eight on the right. The lungs were slightly adherent, otherwise they were healthy. The heart was empty and sound in every particular. The brain exhibited no appearance of any disease, but had undergone considerable change from decomposition. All the other organs examined were found healthy and free from blood. The stomach and intestines were reserved for chemical examination. The tongue opposite the molar teeth was found to be ecchymosed in a space on the left side about one inch in length and somewhat more than half an inch in width. On the right side was a similar spot of about one half that extent. In the right lung were several spots of pulmonary apoplexy."

Evidence of *Henry Budge*, plaintiff—Married in Plymouth, Devonshire, England; I was engaged in clothing and dry goods business; she was an assistant in the same store for her brother-in-law; her father sail maker in dock yard at Davenport. I was 19 when married; she was 26. Continued in same business about a year; married in 1846. I had given and was then giving my attention to preparing for the ministry. I then went to London, and she came in about two weeks. I completed preparations for ministry; spent a year in London; I got credentials there, and was accredited to the Canada Conference. * * I went to Canada to Ottawa. * * Next went to Prescott; took family; were there one year. She attended me one afternoon on a visit to an aged couple; had religious service; they had a niece; I had not seen her before. On leaving, my wife asked me if I had been there before; my wife asked me if I had seen girl before; I said no; *she thought I took too much interest in her*. Called at Mrs. Frazier's and Mrs. Frazier asked what occurred the day before; and learned that Mrs. Budge had been there; and Mrs. Budge said she had been to Mrs. Frazier's and was treated so shamefully that she could not stay another day, and called it a cursed country and wanted to go back. I asked her to wait till end of year; she wanted her trunk packed, and I helped her. I went with her to my sister's at Kingston, and staid two weeks. Returned to Prescott and resigned my place; went to Kingston, and she wanted me to stay there; I said I could not as I was in the ministry and wished to remain in it. She prevailed on me to take house; I took two rooms; sold books; remained in house two weeks. Talked with her and she said she wished to go home; I said we would go to hotel and stay, and take boat; we did; procured cabin passage by aid of Dr. Jenkins; told her she had better go home and I would stay and resume my ministry, and she could return if she changed her mind; became agent of the British and Foreign Bible Society. I started and was gone on my tour three months. When I returned I found Dr. Jenkins had received letter from captain of vessel, saying that Mrs. B. had left them at Nova Scotia; I took measures and found her at Nova Scotia. While preparing means to send to her, I received a letter from her; it stated that she refused to go home; was very poor and wanted money, and said she would like to

come back; I sent \$40 through the post office. She came to Montreal by way of Quebec; furnished another house and remained with her till end of year. She asked me if I would prefer to resume ministry. * * I resumed my charge in ministry; came to Ellisville. * * She wanted to come to the States, as her conduct had affected her standing in society. Stayed at Ellisville and Rutland by request of the people; was there 9 months as minister, and 3 months I was sick. * * While at Rutland my niece visited me to spend a few weeks. I proposed to wife to call with niece on some families, to make it more pleasant for niece; took her and returned about 5 P. M. Mrs. Budge asked us if we had a fine time; *she doubled up her fist and said, "You shall never come to me again—never will I have a child by you."* Took niece to Watertown and had her sent home; then went to Smithville to preach. * * Stayed two years and three months; then went to Camden and stayed two years. Toward close of second year, *she asked one day if I was exchanging gloves with young lady in choir; I said no; and she refused to receive visits of young lady or her family.* * * Returned to Smithville; went from Smithville to Bellville. * * Left for Canada in about 7 months. * * One Sabbath when I returned from church I wanted tea; she wanted me to remain; I went and returned; found house locked; kept out an hour; I asked the reason, and she said *I had no business out.* * * The next morning I was going out and she got into door and stopped me and called to men to stop me. * * The last part of our stay at Bellville she put her hoop skirt outside her dress and danced about; *threatened to kick me.* * * Took her to Canada. * * We all went to England. * * Arranged to leave her in England a year. * * I came back to Bellville. * * Next went to Lyons Falls. * * One day in Prescott was preparing sermon for funeral; she came in and asked me if I was going to such a place; she said I was not bound to go, and wanted me to leave; I wanted her to leave; she refused and began to broom the room; I told her I would put her out; took hold of her arms and pushed her back, and she fell and got hold of my feet; I got feet from her and then put her out and locked the door. That was the only time I ever put my hands on her.

When I first went to Lyons' Falls, went to L. R. Lyons'; I preached two Sabbaths before I was called. * * Went to Smithville, and met family there. * * Went back to Lyons' Falls; returned again in a week; *she made a bed in a closet on floor, and she went into other room and slept with children; did not lodge together after that.* * * Brought her to Lyons' Falls. * * About two weeks before death insanity developed itself to my conviction. * * In August she was extremely religious, and her manner peculiar in worship, and talk in prayer; went into her room and asked her what she would have; she said her Heavenly Father was going to take her, and wanted me to pray, *but not for other women;* and I prayed as well I could, and she said she would show me, and did. * * The next was at the transaction when she was in cellar and afraid of devils. * * She locked me out and I slept in barn.*

"One week ago last Tuesday evening, on my return from Port Leyden, where I had attended a regular meeting of my church, I was met in a similar manner to that above mentioned at Bellville; I proceeded to my room, * * stating at the time that I was very tired and

* It may not be improper here to add a few extracts from the evidence of the witness, Mr. Budge, as given by him before Coroner Rogers upon the first inquisition, and as read in evidence before the same officer upon the examination of Mr. Budge upon the charge of murder, we feel no hesitancy in doing this since this evidence was read from the original minutes on the trial of the libel case.

needed rest. Her remark was, "You shan't rest in this house this night," throwing, at the time, a pair of scissors, which passed close to my head, and struck in the wall over the bed; feeling a little alarmed, I came out into this room. Finding the key was taken from the door which prevented me any seclusion, I urged her to retire, that the children could not rest (closing the door while speaking); she, at the time, saying they shouldn't sleep, nor nobody else that night in this house; about this time a candlestick and lighted candle was thrown at me by her, that was followed by my watch, which was also thrown at me; the children, some of them, at this time had risen from bed, and I proceeded to their room, bade them retire, and closed the door—remained near it until the clock struck six the next morning.

* * During the night she was continually talking in an excited manner; some part of the night sitting at the stove; she tore the hair pins from her hair, and threw them at the stove, and dishevelled her hair. * * Last night, (the night on the morning after which she was found dead,) when I returned from Turin, about dark, she again questioned me closely as to where I had been through the day, and what doing; I answered those questions, gave a full statement and my business at Turin; about this time I left the house and called at Jesse T. Gould's a short time after, she (Mrs. Budge) came in; the conversation was general; after my return home in her company, I found she had gone again to call on Mr. Shepard; I remained reading in this room during her absence; when she returned, she heard my little boy ask me the order of service for to-day, how many appointments I had: I stated I was going to Constableville at night; this displeased her, and led to complaining remarks. * * About half-past nine went up stairs to my bed, and did not see her after that; this morning, by five and a half o'clock, in company with my two little boys, came down stairs, lighted the fire in this room and in the kitchen; then proceeded to my study, while there I heard my little girl cry out very loud; I came down stairs to enquire the cause; she says: "Oh! pa, ma is dead!" I asked her how she knew; she satisfied me; I said, "Call Mr. Shepard;" Mr. Shepard and Eli came in, and I asked them to go and look, and they said it was so; my little girl came to me at the barn last night, and stated that "ma had given Emma Gould a letter to somebody, and I told her that ma was going to make trouble, and wished her to keep that letter for you;" when at Mr. Gould's I asked if I might be allowed that letter, and Emma delivered it to me; I found it was addressed to her sister in England; *I have never intercepted a letter to her friends before.* *

* * * My reason for doing it now was because of threats, that if people wouldn't believe her here she would expose me where people would believe her; she had taken some verses with music attached from my desk, which I had received from a niece in Canada; she insisted that it was from some one of my lady friends; would not take my word; supposing that these verses were in that letter, as she had threatened to send them with her usual interpretations, I opened the letter; the verses were not inclosed, but the fact was stated therein that she had got them; other comments about my going to Constableville, and other places out of my immediate parish, all tending to misrepresent me and the truth; I threw the letter in the fire; she stated, also, in the letter, "Such is my misery here where I have no friends, that I sympathize with pieces I read in the papers of persons who commit suicide;" she did not know anything that the letter had been burned; she did not

ask about it. * * I heard no noise during the night; I never knew her take any instrument indicating that she designed to commit suicide."

SUBSTANCE OF JUDGE'S CHARGE TO JURY.

Causing libel to be printed in Albany, in which Taylor or Atkinson participated, was a publication.

The defendant caused the libel to be printed.

The defendant, having the sole custody of the printed libel, is liable as for a publication, if any one or more of them get into circulation by his act or neglect; and being found in circulation, it is incumbent on the defendant to show that such circulation was not by his act or neglect.

If the mailing of the libel was the act of some third person, in which the defendant did not participate, he is not responsible for this publication; but if he so participate he is responsible.

The libel is to receive a reasonable construction, not a strained one, either to charge or discharge the defendant.

Does the libel charge upon the defendant the crime of murder?

Does it contain any charge holding the plaintiff up to public notice, ridicule or contempt? If so, it is actionable.

Does it accuse him of criminal intercourse with other women?

The defence has undertaken to justify the charge of murder only.

To establish his *defence* he must prove beyond a reasonable doubt that *Priscilla Budge* was, on the night of the 10th December, 1859, *wilfully murdered* by the plaintiff in this case.

He further *insists*, by way of *defence*, that the *circumstances* attending the death of *Mrs. Budge*, were such as to show that the defendant in making the charge was without malice.

If the *justification* is established the defendant is entitled to a verdict in his favor.

If the *latter defence* is proved, it does not entitle him to a verdict in his favor; it merely mitigates or lessens the damages.

The first question then, is whether on the evidence it is established beyond a reasonable doubt that plaintiff murdered his wife.

To establish this *defence* the defendant relies on the following propositions, which he insists the evidence demonstrates:

I. That *Mrs. Budge* was suffocated or strangled before her throat was cut.

II. If not, some person other than herself inflicted the fatal wound.

III. That the plaintiff did commit the crime.

1st. The plaintiff and his wife lived unhappily, and the plaintiff was the offending party; omitted to cohabit; while she was incapable of doing labor she was left to perform it, and no hired help employed to relieve her.

His declarations as to violence to her, and that he could not or would not live so.

Does the evidence satisfy you that the difficulty which existed between plaintiff and his wife had so far alienated his affection from her as to induce him to desire her death.

If so, then it is a circumstance of great significance and requires the jury to examine the other facts attending the crime, as pointing to the person guilty of the offence, if one was committed.

If he was not the culpable party, then it loses its significance so far as the difficulties may have agency, if any, in inducing him to commit the offence.

2d. The position of the body, bed and clothes, were such as indicated the act not to be hers. Convulsions attend hemorrhage and this would derange bed clothes.

3d. The cut was one which Mrs. B. herself could not make.

4th. It is alleged that she was suffocated before the wound was inflicted, and this, they say, was proved.

1st. By the small quantity of blood found.

2d. That if the large arteries had been cut in life the blood would have been found scattered over the clothes and walls. (SWINBURNE.)

3d. In case of suffocation, one or both lungs become gorged with blood, and that such appearances existed in this lung in this case.

4th. That it was not by hemorrhage. (SWINBURNE.)

1st. No evidence of convulsions.

2d. Eyes and mouth would be open.

3d. There was not as much blood as would be discharged in such case.

4th. That it was not scattered as it would be from the arteries of throat if cut with the heart beating.

The evidence on part of the plaintiff, on this point, is by Drs. Clark,* Hogeboom, Coventry, and Thomas, who testify in substance:

1st. That the cut could only be made from left to right and could be made by her.

2d. That they knew of no way in which it could be done by another.

3d. That the blood when *arteries* are cut would be discharged against upper wall of wound *and would not be scattered about.*

4th. That she did not die by suffocation or strangulation.

5th. That she did die by hemorrhage.

6th. That in case of death by hemorrhage, the heart and vessels of the circulating system would be empty and would be pale. That in this case they were empty and pale.

7th. That in case of death by suffocation or strangulation, the body would exhibit external marks and the lungs would be congested, as would the tissue under the scalp and under the pericardium.

8th. She threatened self destruction.

9th. She was insane.

MITIGATION OF DAMAGES.

If a publication is proved the law implies malice. But the amount of damages will depend upon the degree of malice which influenced the defendant in writing and publishing the libel in question.

This malice is evidenced:

1st. By the matter of the libel.

2d. By the extent of the publication.

3d. The good or bad character of the plaintiff, (Budge.)

4th. By the actual injury done to the party, and to this the jury may add damages by way of punishment.

Malice being of the essence of liability in cases of libel, it is competent for the defendant to show that he was not actuated by it in writing or publishing the libel.

The absence of malice must appear, as a general thing, from the facts and circumstances existing at the time of the publication.

* Dr. Alonzo Clark, of New York city, Drs. Hogeboom, Coventry and Thomas, of Utica.

The fact that the defendant, at the time of the publication had reason from the facts and circumstances, existing at or before the publication, to believe the plaintiff was guilty of the acts charged, he would not be thereby relieved from liability for the damages which legitimately and naturally resulted from the publication; but it would relieve him from any liability which the existence of actual malice would justify and require the jury to give.

The bad character of the plaintiff is legitimate evidence in mitigation of damages, the action being for injury to character; defects of character would, properly and legitimately, reduce damages.

If the jury find the publication (proven) and that there is no justification, and that the defendant was actuated by express malice they will give such measure of damage as will fully compensate the plaintiff for the injury done his character, and such further damages as will punish the defendant for the infliction of the injury.

If the justification is proved, then the plaintiff is entitled to like damages for the injury sustained by reason of the other charges against him in the libel.

If they find the justification not proved, but no actual malice, the plaintiff will be entitled to the damages which naturally followed the injury to his character.

After hearing the arguments of counsel for the respective parties, and the charge of the court, of which the foregoing is the substance, the jury retired, and upon coming into court, rendered a verdict for the plaintiff for the sum of \$100.*

BODY—ITS CONDITION

Dr. Clark as medical counsel for Mr. Budge, relies on the following points for proof of death from hemorrhage :

"I should be confident in expressing an opinion that† the condition of the body of Mrs. B. externally,‡ the absence of marks of violence upon it,§ the character of the wound in the neck,|| the condition of the body

*It will be seen by this clause of Judge Mullen's charge that there were in the libelous article other offences besides that of murder charged against Mr. Budge, and, *QUEEN*—may not the verdict for one hundred dollars have been rendered for the plaintiff by the jury, in accordance with the instructions given in this branch of the charge, as compensation for damages sustained by reason of the other charges in the libel, for which no justification or explanation was attempted by the defendant ?

† Externally, the body was mouldy when he made the examination, and there was no careful inspection at the time of death, hence he could not well make this statement.

‡ We do not know whether there were or were not marks on the body, and since "opening of the jugulars would remove many of the marks" we should not find them (had they existed at the time of death) 22 hours after the throat was cut (in death by suffocation or manual strangulation) see death by hanging, garroting by Thugs, or a handkerchief twisted tightly about the neck.

§ There is no discrepancy as to its character among the physicians who made the examination.

|| Dr. Clark's colleague (Dr. Hogeboom) agreed with us as to the ecchymosed condition of the œsophagus behind the larynx—also the ecchymosed and chewed tongue was admitted by all the parties. Dr. Clark and his associates assert that the large, small, and even capillary vessels were empty both in front and rear of body. They also differ from us as to the condition of the lungs. We all take same data as to weight and density—only that Doctor Clark states all the three pieces of right lung were apoplectic (circumscribed.)

internally,* the emptiness of the entire circulating system and absence of blood, together with the other appearances and condition of the organs and parts," enable to state that "she died from loss of blood beyond a doubt." Now to substantiate this, (ignoring entirely the condition of the lungs, the left of which weighed nearly 13 ounces, instead of 4.50 ounces; the right weighing 17 ounces instead of 5.50 ounces; also the all-controlling fact that there could not have been more than 2 pounds of blood lost, while she, from his own statement, contained 25 to 28 lbs. of blood, two-thirds of which (15 to 18 lbs) should be lost:) he makes the following statement:† There was "no part of body in which blood had settled—no difference between back and front of body as to color." "If there had been blood in it (the body) the blood would have settled to the back." (M.) "This would have been obvious after four months." (T.) "Examined veins, arteries, heart, aorta, colon, bladder and vagina, all these with the uterus (were) bloodless. * * Examined arteries there (in pelvis) ; they were pale and bloodless; if blood (was) left in veins and arteries it would have been found there; if blood had been driven out * * (of them) by gas generated by decomposition, the arteries in (such) case (would be) stained arising from change of (the) blood."

With reference to this remarkable statement I shall characterize that portion which has reference to the blood vessels (where decomposition is tardy) as *untrue* and intended to *mislead the jury and profession*, and is not borne out by experience. The veins and arteries are not left abnormally red where the change goes on slowly as it must have done in this instance, where there was no appreciable change in the muscles or other tissues except brain. On the contrary, where the change goes on rapidly as it does in the fall, late in the spring or summer, then I conceive we might have this discoloration to a greater or less degree; and as to the condition of the body of Mrs. B. externally, the absence of marks of violence upon it," M. I have only to say that this body did not decompose and inflate with gas in the tissues as they ordinarily do during the warm season, but appeared normal except being covered with mould, and hence *he* nor no other physician could discover bruises or marks had they existed at the time of his or our examination, while a careful inspection at the time of death might have revealed as much and even more external ecchymosis as we found internal, and hence the *inconsist-*

* Dr. Clark and his associates state that all the vessels including the capillaries, were empty front and rear. We stated that the large vessels and heart only were empty, and as to the stains of blood on body, bed, &c., we take the statement of their witness who saw the bed and body at the time of death, (Dr. Olmstead,) and hence there can be no discrepancy on this point.

† Quotations from the presiding Judge (Mullen) all of which I shall designate in this way (M). Judge Tremaine's notes I will designate with a (T.) The substance of both notes are the same, but in some instances one has given the expressions more in detail, so that I have chosen it in preference.

ency of this assertion. As to the other points I will discuss them all in another place, except the condition of the capillary system of the body, which he says was entirely empty, front and rear. Notwithstanding the assertion that "in every person no matter of what he died, there would be more blood than natural in the dependent position." (T.) This last seems truthful and exactly in accordance with our observation i. e., empty—heart, aorta, and cava—while the capillaries of the back were engorged, showing that the blood had been driven out into the capillaries by gas, but by a slow process which does not produce the discoloration spoken of, as a constant attendant on blood decomposition. He supposes this condition (discoloration of vessels) to be an invariable attendant on death when any blood remains in the large vessels. That this body did not bleed much there is no doubt, and hence the large vessels were full of blood at the time of death. Doctor Clark adopts the following course of reasoning to prove either that she did or did not bleed. His arguments are evidently intended for either exigency when he says, "The heart could not expel all the blood."

This would arise from the fact that if the blood is below where it enters and discharges (to and from) the lung and there is no way to expel blood from the lung except the heart" * * and its "last pulsation would remain" * * The parvagus "have a certain control over lung * * and when cut lessens number of respirations and increase the quantity of blood in lungs." M.

In reference to this point, Dalton, in his Physiology, speaking of the effects of the division of both pneumogastric nerves alone, makes use of the following explicit language: "Immediately after the division of the nerves (alone) * * The respiration is hurried and difficult, owing to the sudden paralysis of the larynx and partial closure of the glottis by the vocal cords, as already described. This condition, however, is of short continuance; in a few moments the difficulty of breathing and the general agitation subside, the animal becomes perfectly quiet and the only remaining visible effect is a *diminished frequency in the movements of respiration* * * Death takes place at a period varying from one to six days after the operation, according to the age and strength of the animal; the only symptoms accompanying it are a steady failure of the respiration, with increased sluggishness and indisposition to be aroused * * The immediate cause of death, after this operation, is the altered condition of the lungs * * It is not at all certain, however, that these alterations in the pulmonary tissue are directly dependant on division of the pneumogastrics, which is performed in the middle of the neck. The filaments of the inferior laryngeal nerves are also divided and the narrowing of the glottis produced by their paralysis must necessarily interfere with the free admission of air into the chest."

Now, when the carotids are both cut simultaneously with these nerves

(pneumogastrics) the blood is poured out rapidly and the animal or man, as the case may be, dies of hemorrhage and hemorrhage alone, while if in conjunction with this, the trachea is severed there is no obstruction and the animal dies by hemorrhage, as before stated, and still no "concurrency of suffocation," with "hemorrhage," since death takes place before this ("concurrency") can exist; and as to the influence on the lung (in Dalton's experiments) it is induced by closure of the glottis. Cutting of the trachea, however, obviates this. The 2d condition in Dalton's experiments, is the gradual consolidation of lung tissue; this cannot take place when all the parts are cut simultaneously, since the person is dead and cold long before such consolidation can take place, while Prof. D. makes no mention at all of the heart's being affected by these nerves. Still farther, Dr. Clark states that "cutting the parvagus, Carpenter says will not disturb the regular beats of the heart, (and) I concur in that." In another paragraph he states, "cutting the parvagus nerves makes the pulsations of the heart quicker and weaker," M while the truth is, that where *all* the *parts* are *cut* (anterior to the vertebræ) *simultaneously*, it does not *affect* either the *heart* or *lungs*. Further on he states as an additional reason for the small amount of blood lost, that the "heart would cease to beat in perhaps 30 seconds after both of the carotids are cut." M Now, taking 75 beats to the minute and $1\frac{1}{2}$ (the data claimed by Mr. Budge's counsel) ounce expelled at each pulsation, would make a little over 3 lbs. of blood lost, instead of 25, his data of entire emptiness of the capillary system. This even added to the following statement that death is often produced "by the joint concurrence of asphyxia and hemorrhage,"* M and there would still of necessity be a large amount of blood remaining in the system; hence, (on his theory) the body could not be "entirely empty, front and rear," and "the veins colorless." Now, following up this same train of reasoning

* I add this to show what kind of cases Dr. Clark has to resort to show this "concurrency." One at a glance can see the deception practiced in offering these cases as the counterpart of the case of Mrs. Budge—when all the tissues anterior to the vertebræ were severed and hence this "concurrency" cannot take place. I quote all he says on the subject. (See Academy of Medicine Bulletin, page 336.)

"SUFFOCATION AND HEMORRHAGE CONCURRING.

"The fact that suffocation may occur in cut-throats seems to have attracted but little attention from medical jurists, yet the fact is distinctly announced by several authorities, and is recognized in some of the reported cases. This may occur in either of two ways: by the retraction of the trachea, and its obstruction by the soft parts, or by the filling of the trachea with blood from the wound.

"Briand and Chaudé (*Legal Medicine*, p. 309) state that if the trachea alone is cut, the inferior end retracts into the soft parts, the air no longer penetrates to the lungs, and death occurs from suffocation; if vessels are wounded at the same time, death is produced by suffocation and hemorrhage.

"Orfila (*Legal Medicine*, li. 506) states, "when the trachea is completely divided, the inferior end is retracted and hidden in the neighboring parts, and the person dies of suffocation."

"In the case already referred to under the head of sprinkling observed by Adelon, Dubois, Boyer and Rami (*Annales d'Hygiène*, xv. 394) these observers all recognize the fact that the blood will flow into the trachea and cause asphyxia. It is stated in their case that the trachea was retracted one inch, and that blood was found in the air tubes and assisted in destroying life. The lungs were much engorged. In a case recited by Devergie (*Legal Medi-*

to account for this condition, he says that "it is recorded that the loss of a pint of blood destroys life" * * "The sudden loss of blood has a great deal to do with producing death."* M The question would naturally arise, what has the sudden loss of blood to do with this case? If this body was in the condition in which it was said to be by this medical adviser, (*entirely empty, front and rear, capillaries, &c.,*) then to account

cine, ii. 117) homicide was committed by cutting the throat with a pair of scissors, The trachea was completely divided, as was the vertebral artery. Death was produced by hemorrhage and asphyxia, blood being found in the bronchial tubes.

"In the case of the great wound already referred to, reported by the same author (*Annales d'Hygiène*, 418) it is stated that "the blood was introduced into the right bronchus only, and had penetrated into the last ramification of the tube; nothing similar was observed in the left."

"In Leuret's case (*Annales d'Hygiène*, v. 236) already cited, that of the officer who cut his throat with embroidery scissors, the trachea and right carotid artery were completely divided, and the left jugular vein and oesophagus partly, and blood had penetrated into all the air tubes.

"In a case of homicidal cut-throat reported by Bayard (*Annales d'Hygiène*, xxxix. 433) the trachea and thyroid arteries were divided and the trachea and bronchi were filled with frothy blood, and the lungs were congested.

"The fact that death may occur in this manner, and that asphyxia may play an important part in cut-throats, through blood introduced in the manner here indicated, is recognized by Taylor (p. 296). He says, if in case of a wounded throat, blood should flow into the trachea, it may cause death by asphyxia. In the case under consideration, the opinion has already been expressed that blood did in this manner enter into the breathing tubes and lungs more upon the right than upon the left side; and while it is admitted that this would be a sufficient cause for engorgement of the lungs had such engorgement really existed, the statements already made show that the quantity of blood contained in these lungs was really less than is usually found in death from common causes; at the same time it is altogether probable that these organs contained a larger quantity than if the person had died from wound of the carotid arteries without opening the wind pipe." (See note A.)

Note A.—Careful experiments show more blood in the lungs of animals slaughtered by cutting the wind pipe simultaneously with the arteries, by transfixion of the neck (leaving the wound valvular) than by cutting all the tissues from without, inwardly.

* I will quote all Doctor Clark says in his report of this case before the Academy of Medicine (p. 340), on the subject of the loss of blood, and give the six cases which seem to have been intended as analogous to Mrs. Budge. What that analogy is, I leave for the readers to judge from inspection of the case.

"At one stage of this trial, while it yet appeared that the quantity of blood lost was inconsiderable, it became of importance to ascertain what was the smallest loss that had proved fatal in the recorded cases.

1. In the case of Augustus Dautun (Beck, ii. 141), murder was committed, and the body afterwards cut to pieces. Dupuytren stated that the wounds in the chest were mortal. The thorax contained four pounds of blood.

2. Mr. Watson mentions a case (quoted by Taylor, 298), in which the internal mammary artery of the left side was divided by a stab in the chest. The man died on the ninth day, and four pounds of blood were found effused in that side.

3. Mr. Gutteridge (*Lancet*, Oct. 31, 1846, page 478,) reports the case of a woman, aged 36 who received a kick from her husband in the lower part of the abdomen while she was in a stooping position. Seen by Mr. Gutteridge in three-quarters of an hour, she had lost from three to four pounds of blood. She was sinking, and expired a few minutes after his arrival. The wound was entirely external, the left crus clitoris having been crushed so as to expose its cavernous structure.

4. In Beck (ii. 365) it is stated that a young man, sixteen years old, was stabbed with a nail rod and died in three minutes. The blood lost was one and a half pounds. The thoracic aorta was found wounded.

5. In the instance already cited (Beck, v. ii, p. 134) on the authority of Adelon, Dubois, Boyer, and Rami, it is reported that one pound of blood was lost. In this instance, however, it will be remembered there was congestion of the lungs, and blood in the air passages.

6. In Beck (ii. 348) it is reported on a Boston authority that a prisoner cut his throat, and died with the loss of a pint of blood. It is suggested, however, in this case, that air might have entered the jugular vein.

It would seem, then, that persons whose throats are fatally cut may die on the loss of a pound of blood, and it does not affect the question at issue that a circumstance other than the mere loss of blood aided to produce the death. The question is, What is the smallest loss of blood, which of itself alone, or complicated with other circumstances incident to such

for the blood not *spattering* or being lost entirely in the *direction* indicated by the *laws* of *gravity*, he says "the discharge from the arteries would be into the wound and against the upper wall of the wound" * * The principal discharge would be from them against upper wall of wound, and the blood would fall back and flow out of each side and spatter about. The great mass of blood running out would extend from body from 4 to 6 inches. The blood would run down towards hips, *coagulate* and soak through. * * No *spattering* from *carotid arteries*; when cut, it (the blood) would *dash about* but *not spirt*; *no spattering* or *spouting* except from the *superficial* arteries (See cases attached to this paper.) which vary in size from a *needle* to so small that you can scarcely see them. * * And "if *blood* is found on the *face* of a suicide it would come from the small superficial arteries and from the lower lip of the cut M." This anomalous statement that "the *carotids* would *not spirt*," would be worth a passing notice were it not of itself quite too ridiculous, and also that some object was to be attained by this statement, which seems evidently intended to account for the *absence* of profuse *spirting* of blood, such as would be made by the action of the *carotids* and described by surgeons (Mott and Gross), while to account for the few *small pin-head spatters* on the *face* he makes the *minute superficial arteries* to *spirt* blood over this part—still forgetting that the "*carotid arteries do not spirt*." Again, he states that "if *one* carotid artery is unsevered (not cut entirely off) the blood will shoot about very much. If cut square off, and no obstruction, it would not go straight but a few inches, * * in all 2½ to 3 feet."* This admission is intended probably for the obvious purpose of accounting for any blood-stains which could not be the result of gravity or bloody fingers (forgetting that when both *carotids* are *cut they do not "spirt"*). He further says that the "head cannot be turned so as to let artery discharge (its

wound, may prove fatal in a cut throat? The question of how much blood the body naturally contains, though raised in this case, is in no manner essential to the issue."

Why not? If this body was in the condition stated by him—i. e., every part empty, "the lungs and probably brain excepted," which would involve the loss of 12 to 15 pounds of blood, and hence the amount of blood is, in a special manner, "essential to the issue," since they can have no possible bearing in a case where both carotids are cut, and no obstruction exists to the loss of blood, most of these were punctured wounds, and the blood flows in the cavity of the pleura or peritoneum, or when the wound is valvular (case 5), it may flow into the trachea and produce suffocation. Since, as he says, "My researches have lead me to the *inference* that when *both carotids are entirely divided*, the *spirting* or *sprinkling* of blood from them is *almost nothing*" (Idem, p. 344); so in the case of Mrs. Budge both carotids were cut, and hence she must have lost only a small amount of blood, which is inconsistent with his entire theory of the condition of the circulating system.

*In reference to the flow of blood from cutting arteries, Doctor Clark's (Bulletin Academy of Medicine) says:

SPRINKLING OR SPIRTING OF BLOOD.

"The sprinkling or spirting of blood from wounds in the neck appears to have attracted but little the attention of medical jurists. In by far the largest proportion of cases it is not mentioned, even when the description is in great detail. In this case, however, it becomes a question of importance, on the theory that the woman was suffocated and that her throat was out afterwards. It was urged that in such a case the spirting of blood would be little

blood) outside of the neck." This, in his opinion, is the main reason why the blood was found only where the laws of gravity would take it. If this were true, then the following sentiment quoted from Dr. Clark is untrue: "In case of throat cut (recumbent posture), the blood has been sent into hair and temples, * * it would be evidence of heart's action." M. (What says the Doctor of the agency of an assassin?)

I find, from actual observation, that the course of the arteries from their origin, in the aorta, to this point, (the cut) would direct a stream distinctly outside the cut, and even the head, (this is also in accordance with the statement of Prof. Valentine Mott). Here Dr. Clark virtually denies what he before stated, that the blood from the carotid arteries "did not spirt," and if it *did* to any extent it would be stopped by the "upper lip of the wound," and that the "head could not be turned" to pre-

or none at all, while on the other hand it was claimed that if the throat was cut in full life the blood should have been thrown to a considerable distance upon the bed, and even upon the walls of the room. (See Note A.) It was even claimed by one of the medical witnesses that a cut made in this situation, the heart being vigorous, the head in the line of the body, the body lying upon the back, that the blood would have been thrown from each carotid past the lips of the wound, past the jaws and head, and would have struck in full force against the head-board. *My researches have led me to the inference that when the carotids are entirely divided the spirting or sprinkling of blood from them is almost nothing,* (See Note B.) but that when either of them has been partially divided so as to give such direction to the current of blood as that it will flow forward, unobstructed by the lips of the wound, then the jetting or sprinkling of blood may be considerable. Thus in the case already quoted from Marc, of the young man who cut his throat standing before a window, the furniture and window were spotted with blood to the height of about three feet, an overturned chair was sprinkled with blood, a night-cap on a step before the window, raised about one foot, was spotted on its upper side. In this instance neither carotid was entirely severed, both were cut into "and the right half cut, the left more than half cut."

"In a case reported by Rami, Adelen, Dubois, and Boyer (*Annales d' Hygiene*, xv., 394; *Beck*, ii., 134,) in which only about one pound of blood was lost, the throat was supposed to be cut while the woman was standing a short distance from a wall; the wall was sprinkled to the height of three feet four inches at one spot, and at another spot to the height of two feet six inches. In this case the right carotid was cut in two-thirds of its circumference, on its inner side.

"In the case of Mrs Duval, referred to by Beck (ii., 214), reported by Devergie (*Legal Medicine*, ii., page 168), the larynx and hyoid bone were broken, the superior thyroid artery was cut, but the carotids were not. The blood had been thrown in jets over the features, but it is not remarked that it was thrown upon the furniture. This was a case of homicidal cut-throat; the thyroid artery was enlarged to supply an enlarged thyroid gland

"In the case of Sellis, (See Note C.,) the valet of the Duke of Cumberland (*Beck*, ii.), there was a wound in the throat six inches long, dividing the arteries on both sides, whether wholly or not, is not stated. There was blood on the walls of the room, on the curtains, washstand, basin, and drawers. The body was extended in bed, but Sellis's cravat was cut in several places. On the duke were two scalp wounds, his arm was wounded, his little finger nearly cut off, and there was bloody water in the basin in Sellis's room. Under these circumstances it would seem at least questionable whether the blood upon the walls, bed, and furniture was from the arteries of the servant or the master. These are all the cases of cut-throat that I have met with in which the subject of sprinkling has been considered of sufficient importance to have been described in detail.

"Taylor (page 286) makes the following statement. "The sprinkling may be expected only when the wounded artery is small, or when the blood is effused at a distance. This is a fact which medical jurists should not overlook;" but he adds that it may be accidentally sprinkled from a vein. He says also (page 277), "The hand and weapon cannot escape being marked with blood." He says also, "Sprinkling of blood, when it exists, may be evidence that it came from a living body."

NOTE A. See letter of Surgeons Mott and Gross.

NOTE B. See appendix to this paper.

NOTE C. All good authority says Sellis was murdered and hence its analogy is just as apparent as his other cases; when one carotid only was cut and that in such a manner as to produce death without the possibility of external hemorrhage, (see wound by nail-rod quoted above)

vent this, while the *counter spattering* from the *lip* of the *wound* would not "exceed 6 inches." T. In my experiments with an ordinary 8 oz. gutta percha syringe, where the power applied was about equal to the left ventricle, 16 oz. of defibrinated blood were thrown with force against a screen of 4x4 inches; there was counter spattering of 9 ft. in each lateral direction, 4½ ft. front and rear, equal, in all, to an oblong circle of 9x18 ft. (See plate No. 2.) On this point I will refer the reader to the testimony of surgeons Mott and Gross; also to my report in the Medical and Surgical Reporter,* (vol. 6, p. 377), also in the annexed report of fifteen cases of death from cutting of carotids, two of whom cut both carotids. Now to account for this anomalous action of the carotid arteries, Dr. Clark states that the blood runs "through arteries at the rate of less than two and five-twelfths inches per second, inside of three inches." This is equal to about one foot in five seconds. Carpenter, Todd, Bowman, Kirk and Paget, all say, (in effect) blood travels 1 foot per second, in arteries, and the entire circuit of the circulation in (less than) one minute. The whole arterial and venous circuit does not exceed 10 feet, not more than 5 of which is arterial, equal to 5 seconds. The capillaries, 1 inch per minute, the longest of which is 1-10 inch, equal to 6 seconds, leaving 49 seconds for the circulation through the heart and veins. Now, when it is known from the experiments of Herring, Poiseuille, and J. Blake, that substances put in arteries or veins of the animal, performed the entire circuit of the circulation in from 15 to 40 seconds, and hence, either all these observers are leading the profession astray or else Dr. Clark has made a new discovery as to the rapidity of the circulation.

The doctor, (Clark) says, "I don't believe that Carpenter says that the blood runs at the rate of one foot per second, in the arteries." T.

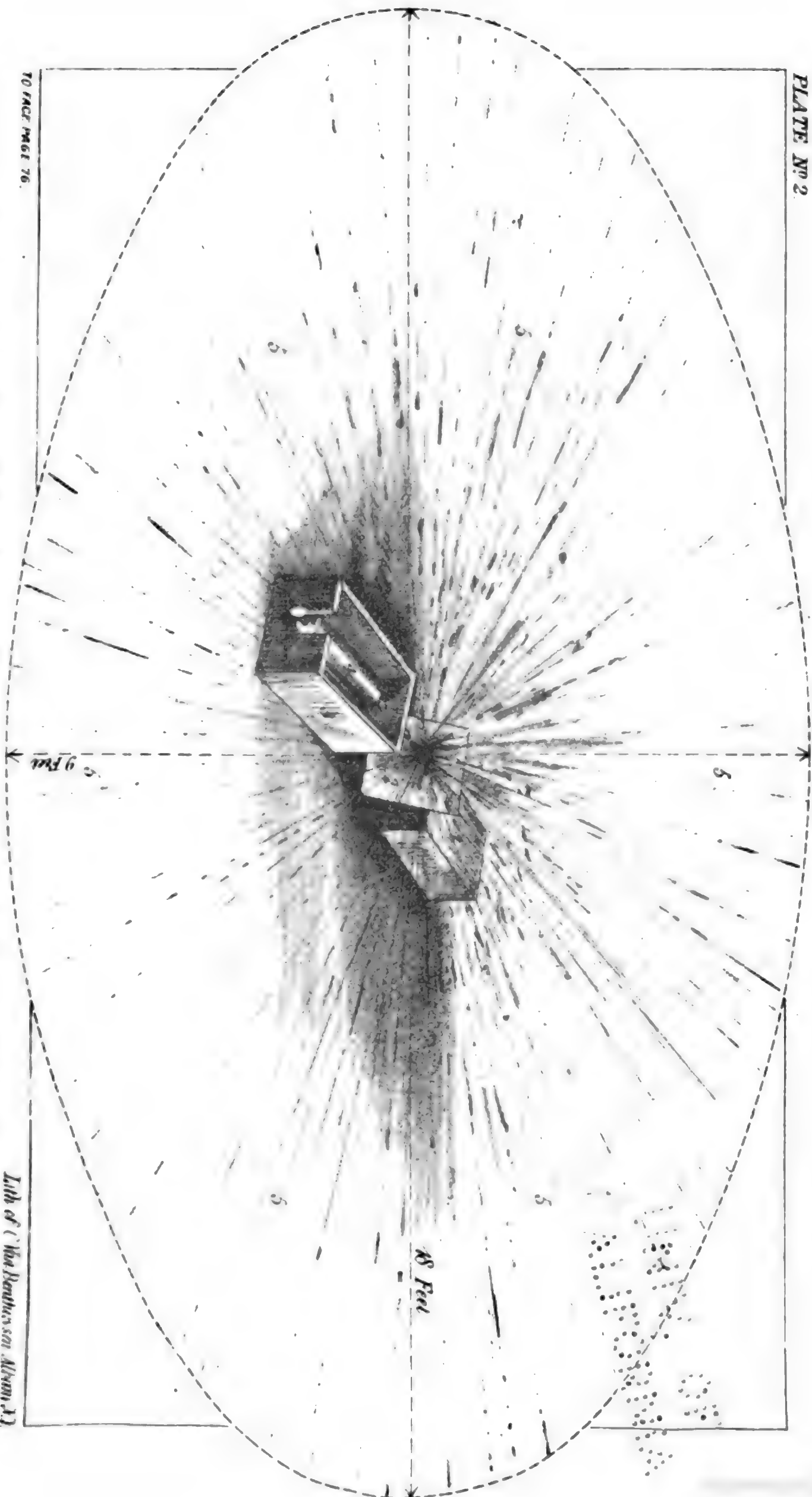
Now Carpenter, quoting from Volkman, states, "that the average velocity of the current in the *carotids* of a considerable number of *mammals* which he examined, was about 300 millimeters or nearly 12 inches per second.

Dalton, in his Physiology, page 271 and 272, states that "the rapidity with which the blood circulates through arterial system is very great. * *

Volkman found as the average result of his observations, that the blood runs in the *carotid arteries* of warm blooded *quadrupeds* with a velocity of 12 inches per second. * * * The velocity of the venous blood as compared with the arterial, is therefore, as 2 to 3, or about 8 inches per second. * *

This expresses with sufficient accuracy the relative velocity of *arterial and venous currents* at corresponding parts of their course. * * *

* See Appendix.



1. Rest for Screen. 2. Screen 4 x 5 inches. 3. Box for syringe. 4. 5/8" Quin Pertha Syringe. 5. 5/8" The manner in which the blood spatters from the syringe.



The rate of movement of blood through the *capillaries* is rather *less* than $\frac{1}{30}$ inch per *second*, or not *quite* 2 inches per *minute*.

To further demonstrate the rapidity of circulation, Dalton quotes from Herring, Poisieulle and Matteucci, who found by experiment that the entire circuit of circulation was performed

" In the horse in 28 seconds,
In the dog in 15 seconds,
In the goat in 13 seconds,
In the fox in $12\frac{1}{2}$ seconds,
In the rabbit in 7 seconds."

When it is known that *man* contains about *twice* the amount of blood in proportion to his weight, as that in any of the warm blooded animals; hence, we say, their circulation *ought* to be *more rapid*, while *mental emotion* or "*insanity*" *should* increase the heart's action, and hence give more impetus to the flow of blood.

Still further to account for the absence of blood, Dr. Clark states: "The artery when cut entirely off would retract into the flesh, and would break to a considerable degree the current of the blood." T. Further on he acknowledges that the "carotids retract the same as the cut, and the wound gapes immediately, and the obstruction to the flow occasioned by the retraction would not be appreciable." T (Consistency, thou art a jewel!)

Now, as to the carotids, they either do, or do not spirt, as well as "superficial arteries," and that, too, furiously, and cover the head, body, and portions of the room, furniture and walls, and in proof of this, I need only quote from the testimony of the *venerable American Surgeon, Professor Valentine Mott*, on the same data as that from which the medical counsel for the defence argues.

He says, (in substance) "I have seen much blood flow in surgical operations, and in suicidal acts, and when all the great vessels have been divided, and all *cases*, the *flow* is *tremendous*. When all the vessels of the anterior part of the neck are divided in the sitting posture, the flow is *more terrible* than you have any idea of, for *terrible* it is, to a person unused to blood. And the quantity of blood lost would be *tremendous*, under such circumstances.

"In this position, the flow of blood would be very great, and extend very far." "If this same person were lying down in bed, with chin elevated and head depressed in the pillow, not only the hand inflicting the blow would be very bloody; *everything around would be very bloody*."

"If the flow of blood was obstructed, the *display* of blood would be very great, too; there would be a great *display* of blood on the *face* and *breast*, and *bed*, and *bedding around*. The blood would fly in all *directions*, to a *great extent*, and if the walls were at a reasonable distance, the blood would hit them. I do not think any one could cut this throat as it was cut, without making a brilliant display of blood about the breast, face,

head-board and walls above, hand, arm, etc., all would be very bloody. Great muscular force is required in any position to cut the left carotid with a razor—(much more to cut both, and the bone, as this was cut).

I cannot conceive it possible that death should take place from a wound like this, without the agonies of death. I mean movements and contortions of the body. It is impossible, in my humble judgment, that it should be otherwise. In violent deaths great disturbance and contortions follow, when both carotids are cut, the head thrown back and the wound gaping as this did. *The blood would spirt outside of the wound very distinctly.*" T.

The contortions here spoken of would have disturbed the bed, while this was entirely undisturbed. So say all the witnesses, and the defence try to get by this, by saying that the contortions were confined to the arms and jaws.

On the subject of the spurting of blood Dr. Gross says, "It is *impossible* for any person to cut the large vessels of the neck without being inundated with blood. If Mrs. Budge had been alive at the moment her neck was cut, the blood of the carotid arteries would have spirted about in every direction, soiling not only the bed and body clothes, but also the floor and probably the walls and ceiling of the apartment. I assume that this circumstance alone is amply sufficient to establish the fact that she had ceased to breathe when her throat was cut. From the position of the razor and from the almost entire absence of blood upon it, to say nothing of the peculiar shape of the wound, I cannot suppose that it was the weapon used to kill Mrs. Budge."

IN WHAT POSITION WAS THIS CUT MADE ?

Doctor Clark states: "Think there is no attitude in which a third person could (be placed to) make this cut."

Though he confesses that the "position of body after death is no evidence of its position before." * * And it would "not be difficult for a person behind her when arm moved as hers did to make this cut." M Now Dr. Clark makes the character of the cut a special reason why it could be made only by herself, and in reference to this he says: "There was a depression the width of a finger below line drawn from (anterior) surface of vertebræ to left termination of cut in skin and there is no motion of hand (homicidal) that would make this dip on left side. A person on the bed to her right could not make this cut, and hence it would come out with a tail. M

The reason why he says it was cut from left to right is * * that it was so deep into the tissue, ran over the bone, and the manner it came out is what satisfied me that it was (cut) from left to right." * * Looked particularly at (the) wound; at left end it passed directly down into neck at right angles with skin. * * On right side (skin)

cut $\frac{1}{2}$ inch further than tissue," and • • *I could tell* whether (it was) cut from left to right or the contrary. NO OTHER PERSON COULD MAKE THIS cut from *left* to *right*. Not possible to have skin and tissue rolled back before weapon when drawn from right to left so as to sweep back and leave the wound of the shape it was on the left side." M

Now this is the very condition that we have contended for on the theory of homicide, and a reference to the letters of Prof. Taylor and Gross will fully demonstrate this point, while they show that we are right and Dr. Clark is wrong, and as to the especial effort that Dr. Clark makes to shew that as a general rule suicidal cuts have a direction a little down to the right, I have only to say this direction is not uniform by any means, while homicidal cuts made in any of the four designated positions, the direction is uniformly downwards to the right or upwards to the left—just the counter part of this cut in Mrs. Budge's neck. With reference to the skin being cut farther than the tissue on the left side, Dr. Clark says: "In case of suicide the skin is cut farther at the end where the weapon comes out." M

The medical counsel (Doctor Clark) quoting from Taylor says that the cut usually terminates in the skin farther than in the muscles. "The fact that this cut went directly in on the left side, and popped over the bone and out, straight on the right side is evidence to me that it was made from left to right." T. To this Taylor says, "Assuming that the incision was made from left to right, the fifth vertebra must have been implicated in the incision *before* the weapon was carried to the right side at all, and yet it is stated that on the right side of the neck, there was a cut in the *skin* one quarter of an inch further than the tissues wounded."

"This fact proves to my mind a deliberate withdrawal of the weapon, quite inconsistent with the fact that the blood vessels on both sides of the neck had been divided, and the periosteum and osseous structure of the fifth cervical vertebra had been cut, or penetrated."

Now after the Doctor (Clark) stating that this could not be cut in any position by any one but herself, he further says that "Mrs. B. could make this cut with her right hand either lying down or sitting up. *Lying on back* does not *interfere* with the *action* of the *arm*, less when lying on a (feather) *bed*. M This seems too *preposterous* for anything: that a person lying down on a feather bed could cut the *neck half off* and *into* the *bone with one stroke* of a *razor*, and that it could be done *lying* as well as *sitting up*, and further that a *feather bed facilitates* the movements of the *arm*.(?) Then, to make assurance doubly sure, Doctor Clark states that "moving shoulder and not elbow the throat could not be cut *only* at a *single* point; the cut would naturally be made by muscles *below* the shoulder." My anatomy teaches me that the shoulder blade is moved by the trapezius, &c., upon which we lie, and that in making the motions spoken of by him, the *scapula* moves through a *space* of about 3 *inches* and carries the arm with it, and in this way the *hand* describes the segment of a circle before spoken of, and hence there

are no muscles below the "shoulder" which have any important action in this cutting, so that well can he say, *that "moving shoulder and not elbow the throat could not be cut only at a single point,"* and if he means by below the muscles of the arm, which are to perform their herculean task, I can only say that he is expecting entirely too much of them inasmuch as without the full movement of the scapula towards the spine there would have to be full flexion of the fore arm on the arm, and the hand on the fore arm, in order to make the cut. Taylor says, "Taking the depth, extent and direction of this wound in the neck it is not such an one as a person could inflict on himself or herself, *while lying on the back in a recumbent position.*"

"The large blood vessels on each side of the neck were divided; assuming that a suicide might have power, after dividing the carotids and jugulars on one side, to carry a razor through the trachea, and œsophagus, as well as through the blood-vessels on the other side, I am decidedly of the opinion that there would not have been the power to shave off the left transverse process of the fifth cervical vertebra, or penetrate the osseous structure." "In the recumbent position, such an act would require the exercise of a great muscular force at a very great disadvantage in the position of the right arm, for using the required force."

Doctor Clark, speaking from rule, makes the following statements:

"That in case of suicide, the instrument is either grasped in the hand, or else lies near it. It is consistent with the deed of a suicide, if found at the side," T, he further says, "In case of suicide, the razor may be in the hand, or near it, and Taylor says that it is consistent with suicide to find the razor in the hand or by the side." T. By reference to Taylor's letter to me, it will be seen that this is not true in this form of cutting. This razor was found under the fore-arm and nearly bloodless, and hence does not come within the range of a suicidal condition. Geoghegan says of the instrument, "I should have farther expected that in case of suicide, followed by rapid death, and when the extent and character of the injury would indicate a most determined effort, the weapon would have been found grasped in the hand, as it usually is." Taylor says: "The weapon, on the view of suicide, should have been in the hand, considering the enormous muscular power which must have been used in a cutting which involved the body of the vertebra, if not in the grasp; the part with which the weapon was held should have been close to the palm." Dr. Clark says, "suicidal cuts made by a right handed person, are either transverse or lowest upon the right side, and the rule is that the cut is longest where it is drawn out." T. Now this depends upon the termination of the cut, the force with which it is made, while the direction of the cut is more generally up to the right than the left, while few make the cuts beyond the trachea, where the cutting is done in this part of the neck. But when the cut is made under the chin, it might be of great length, and might terminate at a point opposite its commencement. On this subject Dr. Mott says the cut is generally above Adam's apple

and too high to be effectual. Geoghegan says, "the seat of the wound is unusual, being commonly to one side more than the other, and generally above the os hyoid." Again Dr. Clark says: "It is laid down in the books that if a razor is found in the hand of a person with the throat cut, it is presumptive evidence of suicide, while if the razor is loose in the hand, it is regarded as evidence of homicide, but not if it is laid around, near the hand." On this subject Taylor says: "How came the right hand to be in a position only slightly bent, the weapon not grasped within it, but lying on the bed 6 or 8 inches from it." Again Dr. Clark says: "There is a rule laid down and deducible from the books, that suicidal wounds are of variable extent cutting all the soft parts, and going back into the back bone." T On this subject Geoghegan says: "Nor have I ever seen or read of a case of *suicide* where a portion of the bone was sliced off."

Another strong point insisted on by the medical counsel was that of insanity, and that insane people make extraordinary cuts, and if so, their circulation should be increased *pro rata*. Admitting all this, and also that Mrs. B. was subject to aberration of mind (no matter whether this was from a *diseased brain, domestic trouble, or drugging*) the *physical facts and conditions remain the same*, and the condition as to *blood, bed and body* would be the same as if the *throat* was cut when *sane*; so that *insanity* has *nothing* to do in the *solution* of this *matter*. Then, I ask, can a cut of this *character* be made in the position in which this body was *found*, by a right-handed homicide standing in front, with his left side to the bed, or by placing himself in any position can he make a cut similar in character to this? I answer, Yes. It is the most natural way possible. In opposition to this I will again quote from Dr. Clark, as the medical counsel, who says, "In my judgment it would not be possible for any person standing in front of that bed with a knife or razor, at one stroke to make that cut as it was made. It would be impossible in the very last degree for a right-handed person to have made this cut towards the right." T. Surely, if a feeble woman could make such a cut on herself, at one stroke with a razor, from left to right, how much easier would it be for a man, as a homicide, to do the same, if he were on the bed behind her, (as there was not less than 2½ feet of space from her body to the wall), or astride the chest, or standing in front of the bed, or at the head of the bed. He could accomplish the act more readily than a weak woman could do the same upon herself, and that, too, on her back. The opinion that it could not be cut from the front of the bed, is quite too preposterous for comment; though, to satisfy myself that it could be done in the most natural manner possible, I placed the body of a dead female in the described position, placed myself in front of the bed, and with a razor cut the throat. The result was, that the cut was upward to the left, and in fact it presented nearly the same characteristics as this (Mrs. Budge's), only I had to make the second incision before

I could complete the cut to the described extent. Now, if a strong man cannot well make so extensive a cut upon another, at one stroke, and that, too, in the most favorable position, what could be expected from a feeble woman on herself, and in the recumbent posture at that. This fact evidenced to my mind that the throat was not cut with a razor. Again, he says: "I think if a person had been behind her, it would not be difficult for him to make the cut, if his right arm was in the same position" M (as hers). And again, Dr. Clark, as medical counsel, says: "I know of no position in which this cut could be made by any other person, because the cut was of a character that a knife in the hands of another could not imitate" T. Any one familiar with the subject can see at a glance the folly of the assertion. They can see how readily it may be done in several different positions: (Plate 3.) 1st. Standing in front; (Plate 4.) 2d, astride the body; (Plate 5.) 3d, on the bed in rear; (Plate 6.) 4th, moving down the bed from the head, and standing above—in every instance the cutting would be downwards to the right. The last and perhaps most ridiculous reason, (after stating the absolute impossibility of a homicide effecting this cut), is, that "if she had been cut by a person from behind, it would have left blood elsewhere" T; as if a murderer could not arrange matters of this kind after the completion of his crime. And as to blood, I think the impress of a bloody hand on the face and pillow is quite too much of itself to be consistent with her almost bloodless hands; and any one at all conversant with the effect of blood on the skin knows too well that it is like the bloody stain on the hands of "*Lady Macbeth*," "*it will not out*" simply from its contact with dry cloth, so that there would still be a strong stain of blood left on this entire hand; and farther, there is no reason why an assassin who cuts the throat of a dead person should leave more blood on the bed than a suicide would, where the blood spirts furiously. Again, Dr. Clark states, "that a hand that could raise a 25lb. weight could make this cut (on themselves) with a razor." On this point Prof. Charles A. Lee says: "The depth and extent of the wound argue a determination of wrist possessed by very few suicides, especially females; and I do not believe it possible that such an incision could have been inflicted by the deceased. The case (on the theory of homicide) in my judgment could hardly be strengthened by any collateral circumstances. The supposition of suicide I should not suppose could be entertained at all by any person." "There is not a shadow of doubt that this incision was inflicted after death."

Doctor Clark expresses the degree of motion in order to account for the blood in front of the body on the sheet, also the prints of a bloody hand on face and pillow, after the effort of cutting, when he says, "In my opinion Mrs. Budge had the power to move her hand after the cut was made first, voluntary and then according to the rule, would be involuntary motion* M Here the great effort seemed to be to shew that

*Doctor Clark, in his Academy of Medicine—reports of this case (page 333)—makes the following statement, from a review of which it will be seen there is no analogy to the Budge



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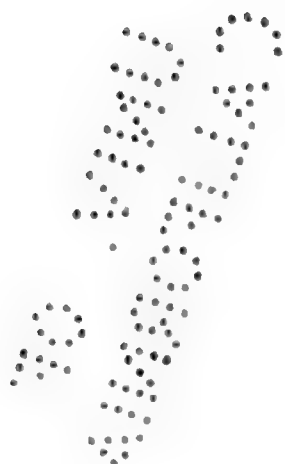
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these movements were confined to the arms. If it is true that we have *voluntary* motion, then there is still *action, life and circulation*, with *arteries spirting with great fury*, and in the *involuntary spasmodic action* which follows, the *bed* would be *disturbed* (this it will be remembered was wholly undisturbed, and remained tucked in at foot and sides) to a *considerable* degree, as it is quite too *ridiculous* to suppose that these *movements* could be confined to the *arms* alone.

On the theory of *suicide* without *voluntary* motion, Doctor Clark finds it difficult to account for all the stains of blood on *face* and hands—on the *right hand pillow*, &c.—the almost *bloodless* hands—the saturated spot in front—position of hand and razor. The above opinion of Doctor Clark on the view of suicide, is inconsistent with the one advanced by him before the Grand Jury, which was to the effect that she (Mrs. Budge) was sitting up—held the sheet up before the neck—caught the first gush of blood—fainted and fell back in bed. When the cutting was done, we say that she (Mrs. Budge) was in the lying position, while the medical counsel (Doctor Clark) before the Grand Jury says she was sitting,*

case, hence well may he say, "*It is not evident in any of these cases that both carotids were cut.*" In speaking of "*Movements, voluntary or involuntary,*" he says: "Regarding the power which this woman might possess after inflicting this wound upon the throat, of passing the hand over the face, placing it in one or two spots on the pillow, and of letting it fall again in the position in which it was found, it is not inappropriate to consider two classes of facts: I. Those which relate to voluntary motion after fatal wounds have been inflicted, and II. Those that refer to convulsive and involuntary movements resulting from hæmorrhage.

"On the first of these points Taylor (page 347) remarks: 'There are several cases on record which show that wounds involving the common carotid and its branches as well as the internal jugular vein do not prevent the exercise of voluntary power and running a certain distance,' and page 270, 'Suicides do not immediately perish from wounds that are commonly termed mortal, on the contrary they have power to perform acts of volition and locomotion which might seem incompatible with their condition.' Among a considerable number of instances recorded in which persons with wounds in the neck, that were almost immediately fatal, have performed such acts of volition and locomotion, two are referred to by Brierre de Boismont (*Annales d' Hygiène*, xli., page 143) who cut their throats before a mirror, walked across the room by the aid of the furniture, covering the floor with blood, and reaching their beds, lay down and died.

"In a case referred to in Beck, (vol. ii., page 350,) a woman in whom the left carotid artery was cut, and many branches of the carotids and jugulars, walked twenty-three yards, crossed a stile three feet ten inches high, and then died. A man afterwards found that the time required for him to do this was thirty seconds.

"The case already quoted from Degranges, in which a man after cutting his own throat went to and returned from another story of the house, and with apparent great deliberation hanged himself, illustrates the same point. *It is not evident in any of these cases that both carotids were cut*, still they leave to us the inference even when both were cut that certain voluntary motions can be performed, and probably all that were supposed to have been performed in this case. But with reference to convulsive movements there can be no doubt that they are common in death from hæmorrhage, and more common the more rapidly fatal the bleeding. These convulsive movements are known to last as long as the bleeding continues, and analogy permits us to infer that in these cases they may have continued at least thirty seconds after the wound was inflicted." Is an undisturbed bed consistent with "these convulsive movements?"

* Doctor Clark, (Academy of Medicine report, page 339) in speaking of the "position of the body," says:

"It will be remembered that little or no blood was described as having been seen below the upper border of the flannel dress that was next the skin on the chest, yet that there was a considerable spot of blood upon the sheet turned down upon the lower part of the body. The question of the position of this person when the wound was inflicted, whether seated or lying upon the bed, is one regarding which there is some doubt, and the question was raised whether it was possible to inflict this wound upon herself lying upon her back. (See note A.)

In my judgment, *this is the strongest point in the case for the prosecution, not because there is any difficulty in inflicting the wound*, for there is none, as any one can convince himself by lying down either on the floor or on a feather bed, (the bed in this case was of

notwithstanding he had the same data that we had. He says when the cutting was done, "She was in the sitting position." This view is from the testimony taken before the coroner, and the blood on the sheet. "In this position I should think the razor would naturally fall near right side;" also that "the right hand would be bloody in throat cutting."

In his subsequent examination, he stated that "he testified before the grand jury that the balance of probabilities was that she was sitting up. The blood on the sheet in front, was the ground of that opinion. No other ground, except, that I supposed there was a larger amount of blood in front than has been testified to. The absence of more blood in front, causes me to hesitate or doubt as to the position in which she was when the cutting was done." Now, he swears before the grand jury that from the testimony taken and the blood in front on the sheet, that she was in the sitting position. The data from which he formed his opinion then remains the same, and still he says "the absence of more blood in front (than what he first formed his opinion from) causes him to hesitate or doubt." *Well may he doubt that this neck could be cut half off in the sitting posture, and not one drop of blood trickle down in front, to say nothing of its being thrown off in jets!* This evidences that his opinion was formed in a great measure from what he expected to be proven, and not from what was proven, which is quite out of professional teaching. Taylor says, "that the wound in the throat must have been inflicted while the deceased was lying on her back, i. e., in the recumbent posture. There was no blood on the anterior part of the neck below the cut, and there was no blood on the anterior part of the body or night-dress." Considering the blood-vessels divided by the wound in the neck, the forepart of the person and dress, if the deceased were sitting up at the time of its infliction, could not have escaped receiving a considerable amount of blood. The description of the flow of blood being chiefly on each side of the neck, is in accordance with the view that the wound was inflicted while deceased was on her back.

feathers), and *making the necessary motions*; but because it is a position rarely chosen, and seems to offer fewer facilities to this kind of suicide than the sitting attitude. (See note B.) The body and head were found inclined a little to the right, but there was not even a probability that this was the position in which the wound was inflicted. There were certainly some movements after the fatal wound was received. There was more blood on the right side of the body than on the left. This would only show that the deceased turned to this position while the bleeding was yet free. Taylor (p. 284) remarks that, "If the throat be cut while a person is lying down, it is obvious that the blood will be found on either side of the neck and not extending down the front of the body. Few suicides cut the throat while in a recumbent posture, and the course which the blood has taken may, therefore, be rendered subservient to the distinction of a homicidal from a suicidal wound." Had it been shown in this case, that the wound was really inflicted while the woman was lying down, in my appreciation, the other circumstances are so controlling as to place this case among the "few suicides who cut the throat while in a recumbent posture." (See note C.)

NOTE A. Doctor Clark in his statement before the grand jury said, she was sitting up when the cutting was done. (See also Taylor's letter to me on the subject.)

NOTE B. I will go so far as to say that such a wound was never self-inflicted on the back, or in any position.

NOTE C. See Doctor Clark's statement as to why he has any doubt as to the position in which the cut was made.

"The head being deeply embedded in the pillow, is also in favor of this view, since, had deceased sat up at the time of infliction, I do not believe that by any accidental fall, such an embedding of the head in the pillow could have taken place; and further, it is not conceivable that the head should have been thrown back as the result of an accidental fall."

Dr. Clark stated before the grand jury that in cutting carotids, the hand "would be bloody." It will be found by reference to the testimony, that this hand was not bloody except on the palmar surface. He further stated before the grand jury, that "in cutting the throat, the eyes and mouth are closed as a general thing." (Grand jury notes,) I think it a new doctrine and data, and it should always be remembered that in a *violent death*, this closing of the eyes and mouth should always take place. Dr. Clark further says, "the arterial blood collects on surgical instruments in drops and lines," and does not cover the whole instrument. T. "On a razor, blood, I should think, would have less action than on surgical instruments." M Here, again, is another of the points of special pleading relied on to show that blood did not soil the polished steel, and particularly "if sharpened on an oily strop.* To prove the fallacy of this, I present two catlings and two razors, each of which had severed a sheep's neck to the bone. One catling and one razor had been stropped on an oily leather, and been in use for some years. The other catling and razor were new and just polished by the instrument maker as highly as they were susceptible of. All of these blades were

* Doctor Clark's statement of this case, see Bulletin Academy of Medicine. (Page 335.) When he says:

"BLOOD ON THE INSTRUMENT.

"It is universally admitted by the authorities that in suicidal cut-throat there must be a certain amount of blood upon the instrument with which the wound was inflicted, and also upon the hand that carried it. (See note A.) But in regard to how much of blood there should be on each, and in what relation it should be found, they are almost entirely silent. In this instance it did not appear that the blood covered the razor blade, but that it was collected in rather narrow bands and in spots upon different portions of it, a band of moderate width being described near the edge of the instrument. (See note B.) It was urged by the prosecution that this was an inadequate show of blood upon the weapon. By the defence it was claimed that upon a polished instrument of any kind, and especially upon a razor that had been stropped on oiled or greasy leather, blood would dispose itself as water does upon such instruments, and thus cannot be made to cover the surface uniformly, but will collect in lines and drops, much as the blood was supposed to have collected upon the instrument in this case. This is a subject, however, concerning which surgeons have the means of forming more accurate opinions than physicians. The most definite statements we find on this topic are made by Taylor. Thus (page 279) he says: 'The blood on the instrument may be partly coagulated and not diffused as a mere film; this would render it probable that it had issued from a living person or animal, or from a recently dead body.' Again, in the same page, he adds: 'Particular attention should be paid to the manner in which the blood is diffused over the weapon. It is not unusual for a criminal to besmear with blood a knife or other weapon which has probably not been used.' " Thus it would seem probable, had this instrument not been used to make the wound, but obtained for the purpose of deception, as was believed by some of the witnesses for the prosecution, that the blood would not have been found collected irregularly on it, (see note C) but it would, in Taylor's language, have been "besmeared" and very generally "diffused."

NOTE A.—See Taylor's letter to me on the subject.

NOTE B.—See Doctor Olmstead's statement that two-ninths of the razor blade only was bloody.

NOTE C.—No fact of this kind was produced by Dr. Olmstead—his witness. See his testimony.

covered with blood, "no drops and lines." This experiment I repeated and now present them for the inspection of this society, the result will appear satisfactory, and gentlemen cannot fail to coincide with the above statement. On this point observe the letters of Profs. Taylor, Geoghegan and Gross.

The point insisted upon by the medical counsel for the defence, that blood acts the same as water on a razor or knife, and that its albumen and saline properties do not render it more adhesive than water, is too apparent a *fraud* to need *comment*, since the profession know how difficult it is to remove blood stains either from the *skin* or from *polished steel*.

And as to suffocation or strangulation, how came the tongue to be chewed laterally, when it never occurs in death by hemorrhage, and how came the œsophagus (see Dr. Hogeboom's testimony) redened and discolored just behind the larynx, and not in any other portion unless it had been bruised by some violence before death—while on the theory of suicide it should have been exsanguined, or at least of the same appearance as the residue. On this point, Professor Lee says, "there is little doubt that death resulted from suffocation," and even if she were subject to insanity, "I should decidedly coincide in the opinion you have expressed in regard to the cause of death, for all the facts point irresistibly to the agency of another hand." Geoghegan says, "the absence also of more than slight stains of blood on the hand, the division of the transverse process of the cervical vertebræ and the condition of the tongue are presumptive of homicide."

Taylor says: "The spot of blood twelve or fourteen inches in length, &c., on the bed-clothes, and the spots on the pillow to the right have no communication with the main source of hemorrhage. They must have been produced subsequently to the wound in the neck. There is no conceivable theory by which the deceased could have produced them, or that they could have resulted from any act on her part on the supposition of suicide. Taking the attitude of the body, the nature of the wound, and the medical circumstances in reference to the position of the stains of blood and the weapon, I am of opinion that this wound was not inflicted by deceased on herself, but that it must have been inflicted by some other person. The head of deceased was pressed backward on the pillow, and it would appear as if the chin had been raised or pulled upward at the time of act of cutting."

On this subject, Prof. Gross says, "how she (Mrs. Budge) was killed. I will not pretend to affirm, but probability suggests itself to my mind of manual strangulation, and that the throat was cut immediately after. This idea derives plausibility from some of the circumstances revealed during the dissection of the body."

In strangulation or suffocation are marks of violence necessary? We say no; for confirmation, quote from Taylor's Medical Jurisprudence,

page 576, where he says, "If a very soft, elastic band was applied to the neck with a regulated force, it is possible that an individual might die strangled, without any external sign being discovered to indicate the manner of his death." Indian surgeons inform us that Thugs and other robbers in India are thus accustomed to destroy their victims with the dexterity of practiced murderers.

A case involving this question of strangulation without marks of violence, was recently tried in France, and from the medical evidence was decided in the affirmative. Now in opposition to this Dr. Clark makes the following statement: "In case of death by strangulation or suffocation the rule is, that there are marks on the *murdered person* as well as on the murderer. No recorded case in which there were not marks, on persons murdered, when they were adults in possession of their strength. Persons strangled usually struggle to the extent of their muscular power and with great advantage." M

In answer I will only quote from Watson on Homicide, page 130, who says: "Death may be effected by strangulation without leaving any marks on the neck. * * When the cord (or hand) is removed some time previously to the inspection, the lividity, swelling and blackness of the face and other signs of *turgescence of blood* about the head may have gone off from the fluidity of the blood" and particularly so if all the large vessels of the throat are cut afterwards. Again, in reference to manual strangulation, Watson on Homicide, (p. 135) states that "When death takes place from *asphyxia*, caused by the compression of the *larynx* or *trachea*, and without compressing the great blood vessels of the neck the countenance remains pale and the head exhibits few of the signs of cerebral congestion; convulsions take place, respiration is interrupted, venous blood circulates in the brain, insensibility, coma, cessation of the heart's action, and death follows :

Doctor Clark says : "In case of death by suffocation (or strangulation) there would be some marks which would lead to suspicion; thinks the marks might not be satisfactory." (M) For the elucidation of this subject I have only to refer to Watson on Homicide, page 127. He says : "The appearances observed after death by *strangling* are the same as those which I described as occurring in *asphyxia*."

Again, in the form called throttling, "the return of blood from the head is not so much prevented as when the ligature surrounds the neck, so that the appearance of *turgescence of blood* about the head is less marked, or may be entirely wanting."

Here he denies that there is any distinctive appearance in death from throttling or strangulation from any other form of asphyxia. Even Dr. Clark thinks that opening the veins might remove many of the marks, which is expressed thus : "In case of *strangulation* or *suffocation* the opening of the jugular would remove many of the marks." (M)

And as to the importance of an early examination, *post mortem*, in

order to make the case more satisfactory, he (Dr. Clark) makes this statement : "An *early post mortem examination would give more satisfactory evidence of asphyxia than 4 months after death.*" (M) This is an honest confession, at least, so far as external marks of the body are concerned, since, at the time of death the physician made no examination of this body, except the face and neck, while at the time he (Dr. Clark) saw the body it was covered with mould and had been much disturbed by a previous dissection. The next point of interest is that in reference to the post mortem appearances in death by suffocation, etc. The doctor (Clark) states : "There are certain distinctive *internal evidences of strangulation and smothering*, we searched for them, but could not find them. We find the same general internal appearances in *all cases of asphyxia, except* it is produced by *smothering and suffocation*. In these we find the *effusion of blood under the pleura and scalp.*" (T.) In elucidation of this point I have only to refer to Christison, Taylor, Watson, Wharton, and Stille, &c.

Taylor, who (Med. Jur., page 594,) says, "in Medical Jurisprudence (there is not perhaps an instance in which we have fewer medical data to base an opinion on than in a case of alleged death by *suffocation*,) the inspection of a body *suffocated*, presents so *little* that is *peculiar* that a medical man, unless his suspicions were aroused by circumstantial evidence, or by the discovery of foreign substances in the air passages, would probably pass it over as a case of *death without any assignable cause* ; in other words, from *natural causes.*"

The following from Wharton and Stille's Med. Jur., § 897: "Nevertheless, these miserable wretches (Burke and his accomplices) reduced murder by *suffocation* to a *system*, choosing it as the mode of death *most likely to leave no marks of crime behind*. The murderer bore with his *whole weight* on the *chest* of his *victim* and with his *hands covered forcibly* the *mouth and nostrils* till *death came on*. (The body of one of the victims presented, according to Dr. Christison, so few traces of injury that without the assistance of proof from other sources, it would have been impossible to have declared that the *death* was not a *natural* one. Idem, § 894.

The post mortem appearances in suffocation, as Casper has pointed out, will be found to differ more or less, according to whether death has been sudden or prolonged, whether it was produced by *syncope* or by *congestion* of the internal organs, and whether the person was *scantly* or *abundantly* supplied with *blood*.

If a person has been *smothered* with the bed clothes or *suffocated* by a *hand* held before the *mouth* or by *compression* of the *chest*, a distinct and *satisfactory indication* will *seldom* be *had.*"

Dr. Clark, referring to Christison, says, "there is a case in which Dr. Christison says the marks would not justify him to say death was caused by suffocation. Have not seen any case in which there was no

external marks." (M) I will here quote Christison's views on this subject, from Watson on Homicide, p. 115 and 121.

"Dr. Christison, remarking upon the case of Margery Campbell, supposed to have been suffocated by the notorious Burke, says, 'the conviction in the public mind that a well informed medical inspector should be able to detect death by *suffocation* simply by *inspection*, and without a *knowledge of collateral circumstances*, is erroneous and may have the pernicious tendency of throwing medical inspectors off their guard by leading them to expect *strongly marked appearances* in every case of *death by suffocation*. That such *appearances* are *very far* from being *always present*, ought to be distinctly understood by every medical man.'

Again he says: "When *asphyxia*, on the other hand, has *caused* death quickly and suddenly, there is little or *no unusual congestion of blood in the lungs or heart*."

My own opinion is that if these marks, bruises and effusions occur, they are only accidental, that they are the exceptions, and not the rule. I have examined three cases of accidental suffocation, and have reports from physicians of three more, and in none of them did this condition exist.

Dr. Clark makes the following statement, which careful experiment proves to be untrue. He says that the third stage of asphyxia is "where all external evidence of life ceases, and the heart continues to beat." Now, in this condition, if the carotids are cut "the flow of blood would be little." (M)

Doctor Clark cannot, surely, be ignorant of the experiments of Doctor John Reed, of Edinburgh, who states, in substance, "when an artery is cut across, immediately after insensibility has supervened (after asphyxia), the blood springs in a full stream with a force equal to what would occur if arterial blood was circulated in the vessels."

Also, when "a tube, with a stop cock, was fixed in the trachea and a hemadynamometer was introduced into the femoral artery of an animal (asphyxiated and insensible), the *mercury* actually stood *higher* in the instrument and the *arteries became more distended and tense* for about two minutes." this was *true* even when the blood in the *arteries* had become *equally* as dark as it was in the accompanying vein." Now, in this condition, then, the blood would even spirt more furiously after consciousness ceases and the arterial blood is fully changed into venous, which occurs in one minute and a half to two minutes* after the air has been entirely excluded from the lungs. This ill accords with Doctor Clark's statement, which is, if Mrs. Budge was "*smothered* and (the throat) then cut, not much more than a half pint of blood would run out—maybe less," and this cutting in this condition "would not lessen (the) weight of that lung." Now, this would depend on the

*Edinburgh Medical and Surgical Journal, 1841, v. 55, p. 446 and 450.

time at which the cutting was done. If cut at the stage spoken of by Prof. Reed, the force of the current would be greater, and the amount of blood lost—both from the lungs and the general system—would be as much as if cut during full life and consciousness.

Now, to show that in death from asphyxia that nearly all the congestion can be removed by cutting the throat and severing the large veins, I quote from Watson on Homicide, page 136, where he says, “in consequence of the blood remaining *fluid* (in death, from asphyxia), * * the position in which the *body* may have been placed may have removed the congestion about the head and face. The greater part of the blood may also be removed from the body by opening the jugular vein and destroying the congestive ‘appearance.’”

This contrasts strangely with the above statement of Dr. Clark, and still this quotation from Watson is in accordance with my observations. “A large flow of blood may take place from the *body*, after death, from asphyxia, inasmuch as the blood remains fluid and gravitates freely, and coagulates only imperfectly on being discharged from the body.”

Doctor Clark, in speaking of blood in the bronchia, says: “In case of suffocation, blood could not get into the bronchial tubes; suffocation has something to do in causing death in case of *throat cut*.” (M) I will hereafter show from Watson and others that blood is effused into the mouth, nose, bronchia, &c. If so, why not, even in the air cells, while, during the spasmodic efforts at respiration, it would become firmly packed into the cells, thus constituting circumscribed apoplexy; while, like the covering of the brain, the sub-arachnoidean cellular tissue, the general cellular tissue of the body, and the general connecting tissue of the lung may be the seat of diffused apoplexy from the same cause; and, as to “suffocation” having anything to do in “causing death in case of throat cut,” *like this* (neck cut half off), it is quite needless for me to say, it can have none, since they are dead before “suffocation” can be induced. Here, again, Doctor Clark will allow me to *respectfully differ with him*. In reference to the next point, though spoken of before, still as it ignores entirely death by suffocation, &c., in contradistinction to death from hæmorrhage, Doctor Clark says: “Blood bubbling up in wind-pipe by raising arm after death, would show that blood had been drawn in life, thus mixing it with air—that could not be so if suffocation had preceded the death, as in that case there would be no air in motion in case of suffocation.” M Now, this fact proves to my mind most incontestibly, 1st. That this fluid blood was not the result of hæmorrhage before death, since, in that event, all the blood becomes solid coagula and serum; 2d. The fluidity of the blood is evidence not of *death from hæmorrhage*, but, on the contrary, of *death by “asphyxia.”* And, as to the “blood bubbling up in the wind-pipe” as the result of alternately expanding and compressing the chest by raising and depressing the arms, thus virtually imitating muscular action in producing respiration

(post mortem), hence the "mixing it (fluid blood) with air" could as well be effected *post mortem as ante mortem*, hence this large amount of "fluid-blood" issuing from the *trachea*, vessels and tissues is, by itself, proof positive to my mind that this cut was made *post mortem* instead of *ante mortem*.

Again, Dr. Clark states that "the marks on the tongue were such as might have been made by convulsive movements of the jaws dying, by hemorrhage." And again, he states that "the marks (ecchymosis) on the tongue might be produced by convulsive movements in death from asphyxia." M

Now in either event there would have been a severe struggle, and convulsive in its character, so that the bed and body clothing would have been materially disturbed (while they were undisturbed); so that taking either horn of the dilemma, we conclude that *some one besides Mrs. Budge* had to rearrange this bed. In death from asphyxia it is known that the tongue is sometimes wounded, while in the hundreds of animals slaughtered by cuts made in the same way, I find no *chewed* tongue. Hence, this would seem more as if produced by chewing in death by smothering. The absence of *any* evidence of convulsive movements about the bed or body clothing is significant of *post mortem interference*, while the ecchymosis of the tongue points conclusively to the *agonies* which accompany a violent death; and unless the bed had been *rearranged* after this, it would still have given evidence of these *convulsive* movements, whether death occurred from *suffocation*, *hemorrhage*, or convulsions from any other cause. This cut (on the theory of suicide) was made at *one stroke* with a razor;* hence, after the completion of this cut, the hand would have to carry the razor down and drop it by the side of the body; then carry the sheet up, and bloody it from the cut, carry it down to the position in which it was found, then carry the hand to the face, then to the pillow, and thence back to the right side, and drop it over the razor. This presupposes 1st, voluntary motion; 2d, a bloody hand; and 3d, that a piece of cloth "saturated" and "soaked" with blood, would not *soil other* clothes with which it came in contact—all of which is untrue.

LUNGS AND THEIR CONDITION.

Now, to account for the congestion, engorgement and apoplexy of the right lung, the Doctor (Clark) pursues a roundabout way to accomplish it; and since the reasoning is so novel I will take some pains to lay it fully before the profession, that they may know how adroitly the defence was managed.

I have already shown how he disposes of the *carotid arteries* and their *natural action*, and since *this* is equally ingenious, I will present all he says on the subject.

* A razor is an unmanageable instrument to use where any degree of force is required, since the whole purchase (unlike a knife) for the hand does not exceed two inches.

1st. He is shown a lung having great specific gravity, portions of which Professor Porter and myself swore were congested, some engorged, some diffused and circumscribed apoplexy—only a small patch of what appeared circumscribed. (I swore, on the trial, that this last portion was about as large as a hazel-nut, 1 drn.) . Now Dr. Clark saw all these, acknowledged that one was congested, one was apoplectic; and by reference to his sworn statement, it will be seen that he finds that this apoplexy (if not of the circumscribed variety) would be troublesome to account for on the theory of death from hemorrhage, and hence goes into a general denial as to there being any diffused apoplexy, any congestion or engorgement—but says that “the parts of lungs I saw in Albany were apoplectic. There were 3 pieces ($1\frac{1}{2}$ to 2 oz.) I considered apoplectic. * * The blood I saw in the apoplectic part of the lung, (which) I saw in Albany, was in air-cells, and must have gone through breathing tubes; blood *cannot get into bronchial tubes unless* through cut, or (the) blood is discharged from (mucous) membrane (while) living.” (M) Now to demonstrate still further his theory of sucking in blood, to account for the apoplexy of this lung, he makes the following statement: “The apoplexy of the lung seen at Albany, induced me to suppose that there had been blood in the trachea, and drawn into the lungs.” This condition, according to his theory, could only be produced by “cutting the throat; and severing of trachea at the same time would produce it.” This “would be caused by blood passing into the windpipe, * * by convulsive breathing.” (F) It is worthy of note that this cutting was the exact counterpart of what takes place when animals are slaughtered Jew fashion, i. e., cutting all the tissues anterior to the vertebræ (from without inwards), and still this apoplexy by “insufflation” *never* takes place, nor can it take place for reasons before stated. Then to negative the idea that there could be any congestion, he denies there being any in the left, and then reasons in this wise: “Congestion resulting from suffocation or strangulation (or any analogous causes) would be the same in both lungs.” On the other hand, if the throat was cut—and by his theory of insufflation you would have “apoplexy” circumscribed, which “*might be in both lungs—it would be most likely in the right.*” (T)

He further states that “asphyxia generally produces *congestion* of lungs, *never* apoplexy. If asphyxia should produce apoplexy, it would be that in which the blood is diffused into the tissue.” I have always supposed one was apoplexy as much as the other. At least all good authority lays it down as such. With reference, however, to the quotation, taking it for granted to be true, it is just the condition we found in the right lung, i. e., at most a small clot and a large circumscribed portion of diffused apoplexy and a much larger portion bordering on apoplexy, and still a larger portion congested, so that in his anxiety to make this apoplexy appear out of the range of possibilities,

as having been induced by asphyxia, he has inadvertently given me the data which make it not only consistent with death by asphyxia, and throat cut afterwards, but renders it a *moral certainty*. Even the next quotation when viewed in its proper light will only strengthen this view. He states that "in drowning the person can get no air," (M) so that there can be no circumscribed apoplexy, and hence the congestion is alike in all parts of both lungs. Not so in manual strangulation or suffocation where there is more or less remission which allows the air to pass. He must certainly acknowledge that it seldom happens that in this latter form of death and under any circumstances where the struggles are severe, violent and protracted, the air is not suddenly and entirely suspended, and hence if blood was discharged into the bronchia by this struggle it might and would be sucked into the air cells while it never could be in cutting the *throat* as *this was* cut, on the theory of suicide—(taking his own statement.) In death by asphyxia from suffocation or strangulation, if blood can be forced out in the tissues such as the scalp and sub pleural tissues, why not into the cellular tissue of the lung and that *too* at *some* points and not *generally* through its substance, and if so, agreeable to his own statement the right lung being larger and supplied more directly with blood would be the most likely to suffer. Hence we should have precisely what was here found, i. e., *congestion, engorgement, diffused, and circumscribed apoplexy*.

On the other hand he claims what was untrue, i. e., that all of the 2 ounces of lung seen in Albany was "circumscribed apoplexy," and that this could not be produced by any form of "asphyxia," and that if there was any congestion at all it should be alike in both lungs. This I am sure is incorrect, for I have seen apoplexy (circumscribed) produced by a combination of strangulation and suffocation in two instances, and still he insists that cutting throat as this was could produce the condition here found in the following words: "*I became satisfied by the appearance of the apoplexy in the lungs that the death was from throat-cutting.*" (T.)* I felt inclined to invite him to write a distinctive text-

*The Doctor's statement that "circumscribed apoplexy" can be produced by "cut-throats" and not by asphyxia from suffocation or strangulation is worthy of notice, hence I will quote all he says on this subject in his Academy of Medicine, report page 331.

PULMONARY APOPLEXY.

"It was claimed by the prosecution that in the right lung there were several points of pulmonary apoplexy, and that statement was admitted as true on inspection of the part of the lung. The explanation given by the prosecution and defence was very different; the former claiming that these effusions were the result of suffocation; the latter, that so far from having been produced by this cause, their very existence proved that no suffocation had been attempted. No cases were cited, and it is believed that no instance can be found in which suffocation has produced circumscribed pulmonary apoplexy.* If the explanation which Watson (*Pract. Phys.*, 3d Amer. Ed., p. 613) and Carswell (*Path. Anat.*, part Hæmorrhage) have given of this occurrence is admitted, it will appear obvious that the fact is inconsistent with asphyxia in any form. Watson, speaking of the ordinary occurrence of pulmonary apoplexy, says: "The seat of the effusion is in one or more of the larger branches of the air tubes and the blood, or a part of it is driven backwards into certain of the pulmonary lobules by convulsive efforts to respire. . . . It is easy to understand how certain portions of the lung, without undergoing any actual change of condition, may be so choked up and crammed with blood as to preclude any subsequent admission of air." He here speaks of the variety called *circumscribed apoplexy* of the lung, which was the variety observed in the lung in question. This choking up and cramming with blood is a filling

book on the subject of apoplexy, and to give us the especial points of difference, as the Profession had been laboring these 1900 years without this grand desideratum.

Again he says: "*There is no difficulty in the blood getting into the trachea in any position of the body.*"(T.)

With reference to this *anomalous* doctrine, I have only to say it is too ridiculous for discussion, and still this *grave counsel* says: "*I have never seen a case of this kind.*" He should not have stopped there but should have said, "nor has any one else ever seen one," nor can it be so produced when the parts are severed as in this case. And as to the right lung being the especial sufferer in this any more than in any other form of apoplexy, he does not deign to tell us where those anomalous cases can be found, only "he has not seen them." The bold inconsistent assertion "that there is no *difficulty* in the *blood getting* into the *trachea* in *any position* of the *body*" bears too strongly the impress of *buncombe* to require any consecutive reasoning as may be seen by reference to the animal while being slaughtered.

And as to the possibility of the "*concurrence of suffocation and hemorrhage*, (so as to prevent the full amount of blood from being lost,) "when the cutting was done as this was (on the theory of suicide) it is quite out of the question since there are but few efforts at inspiration which continue 2 to 3 minutes after this kind of cutting, while the bleeding is finished in $1\frac{1}{2}$ to $2\frac{1}{2}$ minutes and the convulsive efforts continue for 4 to 5 minutes.

of the air cells of the lungs. This can be made evident by the same procedure by which we determine the seat of the effusion in pneumonia; (See Note A.) by the aid of a lens the little coagulum formed in a single air cell can be turned out with the point of a needle and its character ascertained under a microscope, and thin sections of pulmonary apoplexy under the microscope can be easily made to show that it is the air cells that contain the blood and not the general tissue of the lung. Now it is claimed that pulmonary apoplexy of this variety can be produced in cut-throats, (See Note B.,) merely by a forcible inspiration taking place while the trachea is more or less filled with blood from the cut, and inasmuch as "convulsive efforts to respire" are necessary so to fill the air cells, it is plain that such efforts are not likely to take place during an attempt at homicidal suffocation; (See Note C.,) and further, on this supposition there is no source from which the blood can flow to be drawn into the lungs. Those who have noticed the effect of cutting the trachea and large vessels of the neck in the inferior animals will easily understand this. After the wound is made, for some seconds there is no effort at inspiration, but before death takes place there are usually three or more, and one or more of these will be observed to be convulsive and noisy from the blood that has already entered the severed windpipe; and as an observed fact circumscribed apoplexy of the lung does take place in these animals under these circumstances, and will occur in the right lung when the body of the animal is inclined to the right, or in the left lung when inclined to left. (See Note D.)

In confirmation of this view of pulmonary apoplexy I may be permitted to cite a case that occurred under my own observation. At Bellevue Hospital, some years ago, we had a patient who had occasional vomitings of blood, from ulcer of the stomach. One day, while enjoying the sun and air on the south side of the building, sitting with other patients on a bench, he suddenly discharged from his stomach a large quantity of blood. A loud gurgling noise was heard in his breathing, and he fell dead. At post-mortem examination, coagulated blood was found in the stomach. The trachea and bronchial tubes contained frothy blood, and both lungs were studded with numerous masses, large and small, of circumscribed apoplexy. There was no other lesion of the lung. It seems to me clear, that this man, feeling the urgent want of breath while the throat and mouth were full of blood, had drawn this fluid into the lungs by one or more violent inspirations." (See Note E.)

* Doctor Clark says, he has never heard of a case of circumscribed apoplexy from this kind of throat cutting.

NOTE A. What analogy is there in death from pneumonia, and death from severing both carotids?

In asphyxia from hanging, the heart continues to beat for 10 to 15 minutes, and hence the natural inference would be, that in death from carotid cutting, the heart continues to act as long as there is any blood to act on. For instance, in cutting all the parts anterior to the vertebrae of several sheep in the sitting posture, so that the wind-pipe was filled instantly with blood; all the efforts at respiration only blocked it up more thoroughly, so that there was not one expiration after the cutting. The result was, that the trachea and all the large bronchia were blocked up with solid coagula, no "fluid blood" flowing from the wound after half-an-hour. One hour after the wound was nearly dry, the same as all the others *slaughtered, by cutting both carotids and pneumogastrics*, and hence, "no fluid blood bubbled out." These lungs when deprived of the trachea were only about $1\frac{1}{2}$ ounces heavier than those of the sheep bled in the ordinary way, while the specific gravity was much less (about one-third), owing to the impossibility for the air to escape from the closed bronchia. By the most careful examination of these lungs, there could be found no traces of *congestion, diffused or circumscribed* apoplexy.

I wish now to note some points in reference to the opinion expressed by Dr. Clark, as *medical counsel*, respecting the weight and specific gravity of the lungs. Dr. Clark states the specific gravity of the left lung to be 665. Now, Dr. Hogeboom states (June 2, 1860,) before the grand jury: "Took left lung home with us—examined it on the spot—specific gravity, .692. Again in September, 1860, he says, "specific gravity, .692." Prof. Coventry (June 2, 1860,) says, "specific gravity, .692; and on the 13th of September, 1860, says, "specific gravity, .692," so that we have these two consecutive statements by these physicians, who were associated with Dr. Clark in this examination, and though this statement makes only a difference of .027, it will be seen of what importance it is sought to be made in the ultimate results—taking his data. Dr. Clark's first statement is: "The range of the specific gravity is, from .343 to .746," (in life) the mean of which, .544. The capacity of the left chest is "109 inches," and hence the lung in life is the same. The lung when exposed to the air sinks to two-thirds its natural size." Suppose this lung died with all the blood which it contained in life. "By this contraction its specific gravity is reduced one-third, and on this

NOTE B. This circumscribed portions of apoplexy cannot be found in those dying from hemorrhage where both carotids are cut; by a careful series of experiments on animals slaughtered by throat-cuts in the way Mrs. Budge was cut, none of this apoplexy is found.

NOTE C. If blood is effused in trachea during suffocation, why not have it down in the air cells?

NOTE D. From experience, I say this is not borne out by experiment, while if the inspection is delayed some time there may be static congestion.

NOTE E. If this case is presented as analogous to Mrs. Budge, I ask in the name of common sense and common reason, can that analogy be "ulcer of the stomach" and vomiting of blood and sucking into the bronchia and air cells just the condition that would occur in suffocation when blood is forced out of the bronchia, and so be "choked up and crammed with blood as to preclude any subsequent admission of air." On the other hand if the head is cut half off, and no obstruction to the flow of blood, there could be no blood in the air cells and hence no circumscribed "pulmonary apoplexy."

basis the lung should have been 73 inches. Then its specific gravity would have been .181. * * * * Its specific gravity adding escaped fluid to weight as found, would be .288. This lung, (Mrs. Budge's left) instead of shrinking to only "73 cubic inches," ought to shrink (on data of animals bled) to 12.24 cubic inches. Now, Dr. Clark states, that on the basis (of death from hemorrhage) he has laid down that the lung shrinks to two-thirds its natural size, "when the chest is opened, and that" its specific gravity is reduced one-third "in consequence." This statement, on the theory of hemorrhage is erroneous. I find after a series of experiments on animals bled in the way Mrs. B. was supposed to have been bled (by Dr. Clark), that the lung instead of shrinking only "one-third," that the mean ratio of shrinkage is nearly eight-ninths, and consequently the specific gravity is reduced in proportion, and instead of being reduced only one-third, it is reduced as low as five-eighths to seven-eighths; and hence when inflated to life data, it presents a density of only .112, instead of .343, or .746, what he claims is the life data from full inflation, or .288; what he claims must have been the specific gravity of Mrs. Budge's left lung at the time of death. This is on the data of "21 cubic inches," as he found it. Now on the same data (animals bled to death) as above stated, instead of this lung having 21 cubic inches, (in death from hemorrhage) it should have been only 12.24 inches, so that a lung bled to death in the way Mrs. Budge's was supposed to have been, should shrink when the chest is open to one-ninth its original size, and its specific gravity is increased pro rata. This lung instead of having a specific gravity of ".288," (life data) should have been .112, if bled to death. Now, instead of this left lung of Mrs. Budge's having only 21 cubic inches, if we add the 5 ounces of fluid which had escaped, it would have been 30 cubic inches instead of 21 as stated, and taking Mrs. Budge's left lung as 21 cubic inches—then add the 5 ounces of fluid, 30 cubic inches, and hence, 109 cubic inches, the life data of Mrs. Budge's left lung is reduced by shrinkage to 30 cubic inches instead of 12.24; hence taking the data of Dr. Clark (in reference to Mrs. B.'s lung), the sheep's lung, (bled to death) which had a life capacity of 210.96 cubic inches, should shrink only to 59.69 cubic inches, instead of 12.24; 12.24 cubic inches, the mean data for sheep's lungs, bled as Dr. Clark supposes Mrs. B.'s was.

The following tables will give some idea of the comparative relation so far as specific gravity is concerned between the lungs, where death is known to have taken place from hemorrhage, and Mrs. Budge's lung which Dr. Clark says, died of hemorrhage by cutting of both carotids, and still, when collated with those are found to have a specific gravity of .120 to .193 greater than his data would indicate. While, if we take the right lung, the difference will be more manifest.

SHEEP'S LUNGS.—The lungs used in these experiments were taken from the sheep killed, "Jew fashion:" i. e., (placed on the back, head forced backwards, all the tissues, cut from without inwards, and down to the spine.)

	Before inflation.	After inflation.
	Fluid.	Fluid.
No. 1, lungs displaced, [of water]	16 ounces.	102 ounces.
No. 2, lungs displaced....do.....	16 ounces.	130 ounces.
No. 3, lungs displaced....do.....	10 ounces.	...
No. 4, lungs displaced....do.....	11 ounces.	120 ounces.
No. 5, lungs displaced....do.....	11 ounces.	112 ounces.
No. 6, lungs displaced....do.....	15 ounces.	122 ounces.
Total displacement.....	79 ounces.	586 ounces.*
Average displacement.....	13.16 ounces.	117.2 ounces.

Assuming Dr. Clark's data, $1\frac{1}{2}$ ounces=2.7-10 cubic inches, we have the average bulk of lungs uninflated, 23.69 cubic inches, and the average bulk of lungs inflated, 210.96 cubic inches. Mrs. Budge's left lung uninflated=30 cubic inches, inflated 109 cubic inches. Hence, $210.96 : 23.69 :: 109 : 12.24$, and conversely, $109 : 30 :: 210.96 : 59.69$.

Six sheep weight averaging about 120 lbs. bled by cutting both carotids and nerves, trachea, &c.

Mean weight of both lungs, weight 14.9 oz. on the data of $1\frac{1}{2}$ oz.=2.7-10 cubic inches.

Mean weight of both lungs, uninflated, gives 23.69 cubic inches.

Mean weight of both lungs, inflated, gives 210.96 cubic inches.

This makes an average shrinkage of 9 times its original bulk instead of one-third. On this data the specific gravity in life was .112. (See table No. 6.)

Woman weighing 140 lbs., bled by cutting one carotid and wind pipe. Taking 109 cubic inches for the life data of the left lung, then the right having $3\frac{1}{2}$ cubic inches more, makes this lung .112 $\frac{1}{2}$. On this data, this right lung presents a specific gravity when inflated of .168; the left lung presents a specific gravity, when inflated, of .163. On the same data, Mrs. Budge's left lung was .288; and her right lung .305.

Now if we take pro rata muscular weight of body, one (Mrs. Budge) being 96 and the other 140 lbs., the relative specific gravity of this left lung would be about .150 instead of .163, when however it is known that this woman bled from one carotid only it may account for the slight difference in density as presented between her lungs and the mean density of those of six sheep bled to death by cutting both carotids and pneumogastric nerves; the latter however are nearly uniform, and even more exsanguined than where only one carotid and no pneumogastriacs are divided. Now contrast the density of either the animals' or the woman's lungs as compared with Mrs. Budge's left, .288, or right .305, and we have reason to take Doctor Clark's statement that this .288 would be a good deal below the average .545, his data of specific gravity of a lung, with many grains of allowance, since it furnishes irresistible proof that death took place while the lung was full of blood—in other words, death was not produced by hemorrhage, since the lungs were not exsanguined.

Now, it will be remembered that there had been some decomposition of the blood going on during the 4 months, and much bloody serum was driven out through the wound; and some had infiltrated into the cavity

of the pleura, and still this lung weighed at the time of death near 13 oz., and when examined near 8 oz.; instead of which, if this lung died from hemorrhage it should have been reduced to $4\frac{1}{2}$ oz.* Now, if this (Doctor Clark's case) lung died with a normal amount of blood in it, and still during 55 days it is reduced to about what it would have been ($4\frac{1}{2}$ oz.)* had it been bled to death, while its specific gravity was diminished .049. Now, if Mrs. Budge's left lung had contained only fluid blood and no congestion at the time of death, the lapse of 120 days would surely have reduced this (Mrs. Budge's) lung to $4\frac{1}{2}$ or $4\frac{1}{2}$ oz. by the same process, (drainage.)

The Doctor (Clark) is here presuming on the condition of lungs in a normal state in life, and not those which are supposed to have died from hemorrhage, which would have completely *exsanguined* these organs so that scarcely *one drop of bloody serum* could have escaped by the process of "drainage," hence his assertion that "This drainage of 8 oz. of fluid from the right and 5 oz. from the left would not be an unnatural quantity at the end of 4 months in case of death from throat cut," (T.) (*death by hemorrhage.*) Here his statement is entirely opposed to a series of experiments conducted on the lungs of animals, bled to death by cutting in the same manner as Mrs. Budge was cut. (See table No. 1. p. 110.) Hence, I say that 5 and 8 oz. respectively is an unnatural quantity after end of 4 months, in case of death by hemorrhage. And as to the assertion that the lung shrinking from its own elasticity only one-third when the chest is opened in those bled to death, it is *untrue*, and is evidently intended to convey a wrong impression, as can be easily demonstrated by inspection of animals and their lungs when bled to death in the usual way by cutting all the parts anterior to the vertebræ. I think .300 to .700 the range of specific gravity as laid down in Gray's Anatomy, is not intended as life data, since it does not seem probable that there could be such a range in life: but that this is intended for the healthy lung (inflated with the residual blood in it) of those dying from ordinary diseases not involving the lung tissue; and as to the one-third increase in specific gravity when the lung collapses, I can only say that the condensation and specific gravity of a healthy lung depends entirely upon the amount of air and blood contained in them or the degree of putrefaction.

Now, perhaps Dr. Clark means to reason thus, as to the specific gravity of the left lung. If the lung, in life, has a capacity of 109 cubic inches, and on the basis of death, with the lung containing the life data of blood, then, on opening chest it would contract one-third and leave the lung of the capacity of 73 inches, instead of 21 cubic inches as

* Bulletin Academy of Medicine, p. 11, experiment No. 4, made by Doctor Segur, by direction of Doctor Clark, and contained in his report of the case, says, "A woman aged 21, weight estimated at 110 pounds, died of meningitis, the right lung weighed $13\frac{1}{2}$ oz., and displaced $17\frac{1}{2}$ oz., giving a specific gravity of .729, suspended in a stop jar 55 days, the drainage was $9\frac{1}{2}$ oz.; the lung then weighed $4\frac{1}{2}$ oz., and displaced 6 oz. of water, the specific gravity being .680. Here it will be seen that in 55 days, more than two-thirds of the ordinary weight of the lung has drained from it in fluid matter, leaving the lung tissue not yet dried weighing not more than $4\frac{1}{2}$ oz."

found. And in proportion as the lung contracts the specific gravity increases, leaving it of a density of .288, life data, instead of .343 or .746, the extremes of what he claims as life data of specific gravity. Therefore, if this is his meaning he reasons himself out of the range of probabilities, i. e., if this body died of hemorrhage. If it did not then its condition corresponds with post mortem hemorrhage, and is still inconsistent with his theory of death from hemorrhage and *circumscribed apoplexy*.

The last and perhaps *not least point* relied on by Dr. Clark was, that "blood bubbled up in wind pipe by raising arm after death, would show that blood had been drawn in in life, thus mixing it with air. That could not be so if suffocation had produced the death, as in that case there would be no air in motion."

He states that all the blood "coagulates in death, by cutting throat, and hemorrhage and forms into clots around and in the wound," and in a cutting like this "the arteries would continue to drip as long as the heart beat and until coagulation of the blood in the body." (T.) Now, 22 hours after death, and cold weather at that, every drop of blood would, of necessity, be coagulated in the bed, and agreeably to this theory the body, wound, and wind pipe, and there could be no "fluid blood to bubble out." For instance, in cutting the throats of animals, also, in suicides, by cutting one or both of the carotids, in an hour or two, at farthest, there is not one drop of fluid blood, it is all separated into coagula and serum*, and since "fluidity of the blood is common to all modes of asphyxia" and since this was precisely the condition of Mrs. Budge (agreeable to their own theory) we have no evidence of any coagula, except, perhaps, some small ones in the bed. If (on the theory of suffocation) her throat had been cut in the third stage of asphyxia, then I ask, Where did all this blood go to? when it is known that accoucheurs say in *post partum hemorrhage* that 15, 20 and even 30 lbs. of blood is lost in the course of a few hours (also in decapitation 24 to 28 lbs. of blood is lost). The whole bed including the straw as well as feathers and tick, would be saturated, and would even extend through to the floor, leaving a deposit of several pounds of blood on it; and as to the sudden loss of blood having any bearing on a death produced by this kind of cutting it is quite needless for me to say that there is none since fainting has little, if any, effect on the amount of blood lost when its exit from the heart is as free as when both carotids are cut. The heart being an involuntary organ, its action is not materially interfered with, even though syncope supervenes, and more especially, if the blood finds a ready exit as it would in this instance. During syncope, the force of the circulation is somewhat diminished in the system, i. e., in the vessels. Even during this condition if the large arteries (carotids) were cut, the blood would spirt furiously and the amount lost would be nearly the same as if cut during full conscious-

*See Appendix.

ness, so that syncope, and the small loss of blood are obviously out of the question. Thus, if this body, in life, contained 25 lbs. of blood and there was no more than a quart lost, where (on the theory of suicide) had all the blood gone? I will answer! *This body was dead or nearly so before the throat was cut* and the residuary amount of blood in the large vessels was driven, by the gases generated from its own decomposition, into the capillaries, and out of the wound, and thence settled to the most dependent position, just where we found it, and so reported in our notes of the case. This theory of the medical counsel is sadly wanting in consistency. Now if she had been asphyxiated and life not quite extinct, then the blood which flowed in the bed might coagulate imperfectly, while the portion which remained in the body *would, of necessity, be fluid*. On the contrary, if the cutting was done in full life, she would have bled out at least 16 to 18 lbs. agreeably to his own theory, and hence there would not have been left the "*fluid blood to bubble out*" 22 hours after death, so that "stuffing with cotton bat, sewing up, compressing and bandaging did not arrest the bleeding."

Now suppose Mrs. Budge had died of "asphyxia," and the throat cut even after she is entirely dead and cold, the trachea filled with fluid blood. Then the arms are lifted, the ribs elevated and depressed alternately so as to imitate respiration, would not the "fluid blood" and "air" be churned up as thoroughly as it could be under any other circumstances? Add this to the fact stated by their witness Dr. Olmstead, that "3 to 6 ounces" of fluid blood oozed out of the neck during its dressing and this was only suppressed by compress and bandage and we have I apprehend data quite sufficient to establish the fact that *Mrs. Budge died before her throat was cut*. On the contrary if this throat was cut in full life the blood is all clotted in cut, wind pipe, &c., so there is "no fluid blood to bubble up" or churn, even though all the appliances possible were used to effect this end.

The effort made by the defence to show, through their medical counsel that elongated spots of blood were found on the sleeve of the right arm, and fore-arm, when the evidence was that there was *none* in the direction in which the carotid arteries pointed, whether she were in the sitting, or lying position, is *foolish*, in the extreme, since no heart or any other force pump ever propelled a stream without there being drops extending continuously from the point of gravity, (i. e. directly under the nozzle,) to the most extreme point to which the fluid was thrown, and so here the stream could not spirt up, on the face, and leave the intervening neck clean, and still more preposterous would be the idea that the blood could spirt laterally over the sleeve, and still leave the intervening space on the bed entirely clean, and besides agreeably to their theory blood does not spirt from a carotid artery when cut as this was.

So also if she were sitting up on the bed, (as has been *gravely* suggested) and held this saturated sheet up before the neck, still the

right hand would be between the sheet and neck, and would of necessity become covered with blood, i. e., if the flow, or jets on the sheet, were sufficient to saturate its substance—the anterior part of the body would necessarily be covered with blood, and if, in the same (sitting) position, the sleeve of the right arm was blooded, as above stated, the space on the bed, *between and beyond* the arm would necessarily be covered with blood from its spirting, *on the same theory—suicide.*

Another point worthy of notice presented by Dr. Clark is that there was on back of (left) lung more blood than natural. It is such as is found in every body after death.(M) Now he states that this body is empty front and rear, capillaries and all, and still there is static congestion of this lung; if this body (which he says died of hemorrhage) is empty "entirely" why should not the lung be also empty. In animals bled to death, the lungs and body are equally exsanguined, and hence the static congestion should be equal (in death by hemorrhage.) Doctor Clark further states that the weight of the left lung (of Mrs. Budge) was about 13 ounces. "In life it should have been 17 ounces." If we adopt the data of 4.50 ounces for this lung if bled to death—17 ounces as his life data, two-thirds of which, or 11.33 ounces is lost by hemorrhage, leaving only 5.67 instead of 13 ounces as found by him.

The same figures are applicable to the right lung which at death could not have weighed less than 17 ounces when the life data "would be 19 ounces."

Then starting with 5.50 ounces, the weight if bled to death, 19 ounces as the life data, two-thirds of which, or 12.66 ounces, is lost in hemorrhage, leaving the weight at the time of death 6.33 ounces instead of 17 ounces, the least amount it could have weighed at the time of death, and perhaps much more.

Hence, taking his own figures as data to reason from, we have I apprehend more reason to adopt some other theory to account for the condition of these lungs than "throat-cut" and "hemorrhage" in life. Again, notwithstanding "there was on back of (left) lung more blood than natural,(M) he goes on to say, "no congestion in that lung before death—no evidence of it, but evidence to the contrary."(M)

Now, let us see what this "evidence" is. He says, there is in lungs (of an adult) during life not more than 35 to 40 ounces (M), taking 35 ounces for a small woman, and the left lung, according to Doctor Clark's statement, is two ounces less than the right, which would leave it (the left) 15.5 oz. as the life data; now, if (his data, $\frac{2}{3}$ or 10.33 ounces are lost by hemorrhage, this would leave the absolute weight of Mrs. Budge's left lung, at death, 4.15 oz., instead of 13 ounces as found!

Now, the right lung (from the same figures, his data) would present an absolute weight, at death, of 6.5 ounces, instead of 17 ounces as found. Now, adopt any mode of reasoning from the figures presented by Doctor Clark, and we find that these lungs were "congested before

death," and hence "more blood than natural in posterior part of lungs," while both lungs, at death, were nearly three times as heavy as they should have been, in death by hemorrhage! Now, to follow up the analogy still further, I quote from Taylor, p. 819, table of mean weight of infant's lung before and after respiration: 649 grs. before respiration of a full developed infant, 927 after full respiration, giving an increase of 278 for full respiration and establishment of the life data of blood in the lungs; this, then, resolves itself into a mathematical problem.

Now, Doctor Clark has established by the process of "drainage" (see note-report of case copied from bulletin of the Accademy of Medicine) what he thinks is near the weight of an exsanguined lung, we then take this as the data: Then take 649 grains for the child before respiration, 729 grains after respiration, what will be the increase on $4\frac{1}{4}$ oz. (2,040 grs.), = 567,120 (or 6 oz. and 15 grs.), so that, upon this data, this left lung with its blood in life would have weighed 6 oz. and 15 grs., instead of 17 oz. *Ergo*, Mrs. Budge's left lung should have weighed no more than 6 oz. with the natural life blood in it, or $4\frac{1}{4}$ if bled to death; hence Doctor Clark's 17 oz. as the life data is entirely too much, and our statement that the lungs were congested, is not so far from the truth (as Dr. Clark supposed) on the theory of death from hemorrhage. And his statement of "more blood than natural" in "the posterior part of the lung," (though inconsistent with some of the other statements made by him,) is quite consistent with asphyxia and post mortem throat cutting, since the fluid in the jar in which it was placed (Mrs. Budge's left lung), subsequent to its removal, was highly discolored with blood, while there was a large deposit of debris of broken down fibrin and blood in the form of a flocculent sediment in the bottom of the jar, this could not have existed if she had died from hemorrhage from cutting throat, as this was (on theory of suicide). Hence, I say, that the *cutting was done after death*. I have examined all the points contained in the following quotation from Doctor Clark's testimony, except *that which so emphatically denies the possibility of death from any other cause than hemorrhage*.

I have insisted from the first that this woman was *dead before the throat was cut*, and that the cutting was done to cover the *crime of MURDER*, and suggested asphyxia—by strangulation, suffocation, smothering or some other analogous cause, as the probable mode of death. The condition of the lungs, tongue, pharynx, &c., &c., were inconsistent with death from hemorrhage, and I here again quote the whole paragraph where he (Dr. Clark) says: "The condition of the body of Mrs. Budge externally—the absence of marks of violence upon it, the character of the wound in the neck, the condition of the body internally, the empty vessels of the circulating system, the absence of blood, together with the condition of the organs and parts of the body seen by me enable me to state *confidently* what was the cause of death, as strong as language

can *express* it, that she did not die of *suffocation* or *strangulation*, but from the loss of blood beyond a doubt." T.

Now, I will endeavor to show that the condition above mentioned was not only consistent with *asphyxia*, but that those appearances could not well have been produced by any other cause. I will also endeavor to show that death from all forms of *asphyxia* leaves nearly the same *post mortem* appearances as to congestion, taking into consideration the fact that time effaces this congestion in the heart and large vessels; that *cutting the jugular veins discharges the heart and large vessels* connected therewith, and by *induction* also may *relieve* at most some of the *congestion* of the *lungs*, or at least that portion which is situate above the level of gravity; that where the *inspection* is *delayed* some time after death, the *heart* and *large veins* are *empty*; that when the *vessels* of the neck are not *constricted* during the *production* of *asphyxia*, the *face* is *pale*; that where there are *marks* on the *body* of the *asphyxiated* person, *post mortem hemorrhage* would *relieve* or *obliterate* most or even *all* of them; that *asphyxia* may produce *circumscribed* as well as *diffused apoplexy*; that (in death from *asphyxia*) blood is found in the *trachea* and *bronchia*, and hence may be sucked into the *bronchial air-cells*, producing *circumscribed apoplexy*, which (I have previously shown) cannot be *produced* in *any way* by *cutting the throat* and *hemorrhage* in *life*, as *this was supposed to have been* (by Dr. Clark).

The first point I shall notice (from Dr. Clark) is, "that *congestion* resulting from *strangulation* or *suffocation* would be the *same* in *both lungs*—having regard to their relative size." (M) Now by a series of careful experiments on the animal (sheep), I find in death by hemorrhage, where the cutting involved the same as did the wound in Mrs. Budge's neck, that the difference in weight of the right as compared with left lung did not exceed $2\frac{1}{2}$ ounces; while in those suffocated or strangled by a slow process, the difference was in some instances as much as 6 ounces, but always greatest in the right lung. (See tables 1 and 5, p. 110.) And again, he says: "If she had been smothered the (left) lung should have been above average, and its weight would have been at least 22 ounces. (M)

Now suppose this lung had weighed 22 ounces at the time of death, and the throat cut after, then the heart would have been emptied by the *post mortem* hemorrhage (and changes which would leave the lung as found, 13 ounces), and if the *hemorrhage alone* did not *relieve* the *congestion*, subsequent *post mortem changes* by the *generation* of *gas* would *effect* this *most fully*; so that even if this lung contained at death 22 ounces, 13 ounces would be a *great weight* after the *lapse* of *four months*, and the *throat cut at that*; hence his statement that "*cutting her throat after smothering would not have lessened (the) weight of lung*," (M) is not borne out by *experiment*, since it will be seen by reference to the quotation from Taylor, where *cutting the veins of the cranium or neck* (in

death from asphyxia) drains the heart and large veins of the thorax. The following case is quite in point, except that its throat was not cut at all as Mrs. B.'s was: Case of W. B. Kirwan; Taylor, p. 504; death from drowning. "It had been lying nearly a month in a wet grave.

* * The lungs were congested at the back and lower parts, arising from engorgement of blood; the internal organs were not decomposed; the heart was healthy; its cavities, as well as the large vessels leading to it, were empty." In this case one of the witnesses stated that "the engorgement in those lungs was greater than he had ever seen in a case of drowning;" and still like Mrs. Budge, the "*heart as well as the large vessels leading to it were empty.*" Now upon careful inspection of many bodies, after *partial decomposition* of the blood, I find the heart and large vessels empty, while the lungs are materially affected by drainage into the cavity of the chest.

Appropos, to elucidate still further this matter of the emptying of the thoracic viscera and particularly the fluid portion of it, I will quote from Watson on Homicide, (p. 354) in which he says: "If a person has died from asphyxia and if the head is opened first the whole blood congested about the right side of the heart may escape from the cranium from the jugular veins, and thereby materially alter the appearance in the thorax."

Now this fact alone would account for the emptiness of the heart, (in Mrs. Budge) while much of the congestion which existed at the time of death either ran out of the jugular veins by gravitation and the natural elasticity of the heart and vessels or was driven out by the development of gas, or leached into the pleuritic cavity of the chest. Add to this the fact (Taylor, 528) that "if the subject (asphyxiated) has remained a long time in water, (or ground) (see *ib.* page 534) before inspection the viscera of the thorax will not present the characteristics above described, (i. e., congestion of the thoracic viscera,) independently of the changes which take place in consequence of putrefaction, the right cavities of the heart and vessels immediately connected with them may be found collapsed and generally destitute of blood," thus showing that Doctor Clark's statement that "if she (Mrs. Budge) was smothered and (the throat) then cut, not much more than half a pint of blood would run out, may be less. The circulating system, in that event, (would) be full of blood, except near the cut, * * (and) If person (is) smothered and throat cut (afterwards) no blood would flow from artery (except) what gravity would drive out by contraction of artery" M. This I find from a series of observations on bodies dying from asphyxia, from drowning, accidental suffocation, &c., is untrue, in proof of which I will quote from Watson on Homicide, (p. 115) in which he states that "the most important and characteristic appearance which is observable on dissection after death by asphyxia, is the great accumulation of blood in the right side of the heart, and its great veins the pulmonary artery and vessels of the lungs, while there is a comparatively empty state of the left side

of the heart, the large pulmonary veins, and the artery. This gorged state of the right side of the heart and lungs is greatest where the asphyxia has been slow and gradual, by the access of air to the lungs not having been completely prevented. When asphyxia, on the other hand, has caused death quickly and suddenly there is little or no unusual congestion of blood in the lungs or heart. Besides the congestive state of the heart and lungs the veins of the different organs in the abdomen, particularly those most dependant are generally found to be unusually distended with blood. The vessels of the brain, too, are in some cases more distended with blood than is commonly observed in cases of death by other causes. In cases of death by asphyxia, as in most cases of sudden and violent death, the blood is usually found in a fluid state, or very imperfectly coagulated. The blood therefore flows freely out from the large veins when they are divided; venous blood may sometimes be found also in the large arteries." Watson on Homicide, p. 136, says: "In consequence of the blood remaining fluid (in death from asphyxia) * * the position in which the body may have been placed, may have removed the congestion about the head and face. The greater part of the blood may also be removed from the body by opening the jugular veins and destroying the congestive appearance." And in proof of the blood being fluid in all cases of asphyxia, I will quote from Doctor Clark's statement, which is, that "fluidity of the blood is common to all kinds of asphyxia." N. So, also, Watson (p. 155) states that "the blood of drowned persons is generally found to be fluid, as in other cases of asphyxia," and as the point relied on by Doctor Clark for proof positive of hemorrhage during life, and in opposition to death from asphyxia, viz, the coagula said to have been found in the bed near hip, &c., and slight or imperfect coagulation about cut, I will only give the following quotation from Taylor's Medical Jurisprudence, (p. 217,) in speaking of the coagulation of blood, he says: "Some hours may elapse before it (blood) coagulates in the heart and body, hence blood, although it would not be found diffused as by spirting, might, in so far as coagulation is concerned, assume the appearance of having been effused from a living body."

Now this is precisely the case of Mrs. Budge where there was no spirting, and at most but slight coagulation, while at the time of the inquest 20 to 22 hours after death, there was fluid blood oozing from the tissues, vessels, and trachea, which was spoken of as "3 to 6 ounces of fluid blood" "sponged out in the dressing of this wound which required stuffing, compressing and bandaging to prevent the flow of fluid blood continuing. Notwithstanding this, it still oozed out by the side, and through all the dressings, while the bubbling "of air and blood" from the trachea when the arms were elevated and depressed producing artificial respiration, which was relied on as evidence of death from hemorrhage, was in fact the best evidence of death from asphyxia, since if this blood had been deposited in the trachea from the living body it would have been

SOLIDLY *coagulated*; the same would be true of the "fluid blood" from the wound, and hence no "fluid blood" could flow or "bubble out" as there would be no BLOOD to "produce it." As to the presence of blood in the trachea and bronchia, which would account for the apoplectic condition of the right lung (taking Dr. Clark's statement that the 3 pieces of lung (about 2 ounces,) which he considered circumscribed apoplexy, and which he says could be produced by "cutting throat and severing trachea" at the same time. On this point I will show that blood can be effused in the bronchia during the production of asphyxia while it cannot be drawn into air cells, where death is produced by this mode of cutting, *under any circumstances*. In Watson on Homicide, p. 115, in speaking of the effusion of blood he says, "Blood or bloody froth is often found to have issued from the *nose, mouth, &c.*; internally, the appearances are somewhat various according to the manner in which the *asphyxia* has been occasioned and whether death had taken place quickly or slowly," and in speaking of the following (case 126, p. 164) he states "that forcible compression of her chest (was effected) * * with his (the murderer's) knees, * * there was bloody mucus in the trachea and bronchial tubes" so that, in order to have blood sufficient to produce circumscribed apoplexy, it is not necessary that cutting the throat and severing trachea at the same time should take place that the requisite amount of blood should be present. Since Doctor Clark, who is the only author (that I can find) who speaks of circumscribed apoplexy produced by throat cutting (as Mrs. Budge's was), acknowledged "he had never seen one," and though he live as long as Methuselah, I can assure him *he will never see one*.

Now another point adduced by Dr. Clark to prove death by hemorrhage and not by asphyxia, he quotes the "empty heart and large vessels"—that they were "empty and colorless." That they were empty I do not deny, but that they were "colorless" *I do deny, most emphatically*. Now in reference to the *empty vessels and heart* occurring some time after *asphyxia*, I have only to say that the following condition as detailed by Taylor (in his Medical Jurisprudence) does exist in death by asphyxia, where none of the large vessels are severed, how much more reason would we have for expecting to find this empty condition where all the large vessels of the neck were severed near the sternum. In *asphyxia* from drowning Taylor says (p. 528): "On examining a body internally we may expect to find in a recently drowned subject that the *viscera* of the *thorax* will present the *appearances indicative* of *asphyxia*. The *right* side of the *heart* and the *vessels* connected with them (pulmonary arteries) are *distended* with *blood*, * * the *venous* system is generally *gorged* with *dark colored blood*, and the *left cavities* of the *heart* are *empty*, or contain only a small quantity of black blood. * * If the *subject* has *remained a long time* in *water* before *inspection* the *viscera* of the *thorax* will not present the *character* above described, independently

of the *changes which may have taken place; in consequence of putrefaction the right cavities of the heart and vessels immediately connected with them MAY BE FOUND COLLAPSED AND GENERALLY DESTITUTE OF BLOOD.*" So in Mrs. Budge.

Taylor (page 557), post mortem appearances in death from asphyxia by hanging, says, "Internally we meet with the appearances described under the head of Asphyxia, *i. e.* engorgement of the lungs and venous system generally with dark colored blood; the right side of the heart and great vessels connected are commonly distended with blood. But when the *inspection has been delayed for several days this distension may not always be observed.*" Watson on Homicide (p. 162, case 125), in speaking of a case of drowning, some days previous to dissection, and though in this case the "lungs were healthy * * and of a more livid color than natural, and their vessels filled with venous blood * * the heart was almost empty, the right side was particularly empty and flaccid." Now in reference to Doctor Clark's statement, that suffocation and strangulation in opposition to other forms of asphyxia left distinctive marks such as "effusion of blood under scalp, under pleura * * pericardium," &c., I shall only state, that if blood can be forced out into the cellular tissue of these parts (in the form of ecchymosis), why not into the pleural cavity, bronchia and air cells and cellular tissue of the lung in the form of what we found, *i. e.*, diffused apoplexy—congestion and engorgement, also a very small point (as large as a hazel nut) of circumscribed apoplexy. In answer to the statement of Doctor Clark, I will quote a case in point with this exception, that its throat was not cut after the induction of asphyxia, as we suppose Mrs. Budge's was.

Watson (p. 117), says, "After death by suffocation, the usual marks of asphyxia are generally present." Also, page 122, case 106, of strangulation, "Some blood was issuing from the mouth * * the veins of the neck and upper part of the chest when divided poured forth dark colored blood very copiously. The right side of the heart and large vessels contained dark colored fluid blood, * * lungs natural in color and consistence, though collapsing less than usual; when cut into the incision was a livid, fleshy (circumscribed apoplexy) color, and venous blood was copiously poured out. The congestion, particularly in the right, seemed considerable." Now this is a case precisely in point with Mrs. Budge. Now Watson's case was known to have been *suffocated* and when on dissection the medical jurist cuts the veins, a large amount of venous blood is poured out. So also when the *murderer* cut Mrs. Budge's throat, after *asphyxia*, the veins also discharged a considerable amount of blood. Again in Mrs. Budge, like Watson's case, you have *congestion and engorgement*, and *most* in the *right lung*, while the *diffused apoplexy* was so *considerable* that they did not "*collapse readily*," and when cut into, presented a "*livid flesh color*," *evidently apoplexy of the diffused and perhaps circumscribed variety.* While if careful inspec-

tion had been instituted it would probably have presented some points of *circumscribed apoplexy*, from the blood *being sucked into the air cells* from the trachea and bronchia in the *struggles for air*. This would be even without Doctor Clark's desiderata, *i. e., throat cut* in order to have the *requisite blood in air cells*. Another point insisted on by Doctor Clark, is that "neither strangulation nor suffocation would force blood into the pleural cavity." (M) As to this, I cannot contradict the statement, since I have no data. When I first made this examination, I stated that the fluid in the right cavity of the pleura was blood; I so judged from its consistency and general physical characteristics. In this statement, I may have been mistaken, though reasoning from analogy we find blood in other shut sacs, such as the arachnoid, and this exudation, takes place without perceptible lesions, called "exhalation," while the fact that this blood coagulates and even becomes organized where life is prolonged some hours or days. Now, supposing this (fluid in the right cavity) to have been pure blood and effused before death, the carbonated condition of the blood, from the induction of asphyxia, would have been a valid reason for its non-coagulation in the pleural cavity. On the subject of effusions into cellular tissues and the arachnoid, without apparent lesion, I quote from Solly on the Brain, p. 378: "Extravasations on the surface of the brain have [sometimes been described as meningeal apoplexy. This is divisible into two kinds, one into the cavity of the arachnoid, the other into the sub-arachnoid tissue. Effusion in the arachnoid cavity is *never the result of such a decided rupture of the vessels as is visible to the naked eye, and hence it has been called an exhalation.*" In this case the legal, through their *medical counsel*, insisted that this "exhalation" could not permit the passage of the blood—that there must be a perceptible lesion, in order that all of the constituents of the blood could pass through. Now if there is none in the arachnoid membrane, why should there be *ever* "a decided rupture of the vessels * * * visible to the naked eye in case of effusion into the pleural cavity," (idem) page 380, "Apoplectic effusions on the surface (of serous membranes) generally arise from the rupture of small vessels; sometimes no rupture whatever can be found." Now as to the analogy of the serous membranes, I quote from Gray's Anatomy to confirm it. He states, "the arachnoid, like other serous membranes, is a shut sack, and (like the pleura,) consists of a parietal and visceral layer." There are instances in which large effusions take place, sometimes even nearly surrounding the entire brain, which we generally find coagulated (showing that it is pure blood), still "the effusion in the arachnoid is never the result of *such decided rupture of the vessels as is visible to the naked eye,*" and hence Doctor Clark's medical advice to his legal associates is *premature*, and unsustained by the *best authority* in the world.

I will present some figures to still farther elucidate the point of the absolute weight of lungs in certain modes of death—their bearing will

be seen at a glance. I will also elucidate some of the points raised on the murder trial by the defence, which no doubt emanated from Doctor Clark, and since some of them were quite novel to me, I was then unable to give a satisfactory answer. I therefore present the result of my subsequent investigations in this connection.

I examined a muscular woman, weighing 140 lbs., and bled to death, (she lost, as was supposed, 16 to 20 lbs. of blood), her *lungs* weighed 14.75 oz., while Mrs. Budge's lungs weighed 30 oz. If this woman had weighed no more than Mrs. Budge, her lungs ought to have weighed only 10.32 oz., on the data of equal muscular weight, and death from same causes. Hence Mrs. Budge's lungs weighed 20 ounces more than they should have weighed, on the theory of death from hemorrhage.

Taking the above data I think the following tables will be about correct when they are compared with those taken from the animal. They are as follows :

10.33 oz. is the weight of the lungs of a sheep, bled to death.

17.10 oz. is the weight of the lungs of a sheep when nearly suffocated, and then bled.

29.37 oz. is the weight of the lungs of a sheep dying from suffocation and throat cut after. (See table No. 5.) On the data of the woman bled to death:

10.03 oz. should be the weight of Mrs. Budge's lungs if bled to death.

17 oz. should be the weight of Mrs. Budge's lungs, partially suffocated and then bled to death.

29.50 oz. should be the weight of Mrs. Budge's lungs suffocated and cut after death. (Table No. 8, p. 112). Now, the degree of congestion might be much greater than this, depending upon the weight of the body and the means used to effect death. In one instance I found the two lungs of a man (weighing 160 lbs.) strangled and suffocated, weighing 105 oz.; and since the mode of suffocation of the sheep was effected without any struggles, it being produced by close confinement in the cars, hence the congestion and absolute weight would not be as great as it would if done by manual efforts.

The amount of drainage of bloody serum from the lungs depends upon the mode of death. (Table No. 8.) When death takes place from full arterial hemorrhage there is no drainage up to the time of decomposition, (Tables No. 8, and No. 1.) while from those dying from other causes there is an indefinite quantity, depending upon the mode of death and the degree of congestion. (Tables No. 2, 3, 4, 5, 7, 8 and 9.) In the above case of death from hemorrhage there was no effusion of serum during decomposition.

In a case of a man weighing 120 lbs., and dying of cancer of the stomach, where the lungs were exceedingly light (both lungs 12.16 oz.) there was no effusion. (Table 8.) In cases of drowning I have found from 20 to 40 oz. of bloody serum effused. (Table No. 8.)

TABLE No. 1.

Changes in Density of Sheep's Lungs by Throat Cutting.

DAYS AFTER DEATH.	WEIGHT, 120 lbs.				WEIGHT, 140 lbs.			
	Right.		Left.		Right.		Left.	
	Wt.	Den.	Wt.	Den.	Wt.	Den.	Wt.	Den.
1st. Wednesday	6.85	.537	5.75	.500	11.06	.589	8.52	.608
3d. Friday	7.14	.519	5.88	.547	11.28	.557	8.78	.566
5th. Sunday	7.36	.516	6.11	.490	11.83	.493	8.90	.531
7th. Tuesday	7.38	.591	6.29	.536	11.76	.547	8.86	.571
9th. Thursday	7.50	.586	6.26	.617	11.81	.622	8.85	.512
Total increase in weight	.65	....	.51	....	.75	....	.33	.....

TABLE No. 2.

Copy of Experiments to ascertain Changes in Weight and Density of Human Lung.

DAYS AFTER DEATH.	RIGHT LUNG.		LEFT LUNG.	
	Weight.	Density.	Weight.	Density.
1. Saturday	5.02	.647	4.31	.594
3. Monday	4.27	....	3.92	.....
5. Wednesday	4.05	.600	3.72	.573
7. Friday	3.92	.682	3.54	.615
9. Sunday	3.69	.739	3.36	.671
11. Tuesday	3.56	....	3.28	.728
13. Thursday	3.44	.763	3.19	.750

TABLE No. 3.

Changes in Density of Lung.

Man, aged 40, died of cancer of stomach and liver. Weight 125 lbs. After the first density was observed, the lungs were placed in glass jars, covered with india rubber. The right lung lay on the bottom of the jar; the left was suspended from a string above.

The right lung effused 1.15 fluid oz. of blood; the left lost 1.4 fluid oz.

DAYS AFTER DEATH.	RIGHT LUNG.		LEFT LUNG.	
	Weight.	Density.	Weight.	Density.
First day	8.0625	.442	5.750	.469
Tenth day	7.0625	.406	4.391	.399
(Adding effusion)	8.21	.442	5.790	.467

TABLE No. 4.

Changes in Density of Lung.

Boy, aged 17, weighing 100 lbs. Died of suffocation.

DAYS AFTER DEATH.	RIGHT LUNG.		LEFT LUNG.	
	Weight.	Density.	Weight.	Density.
First day	13.19	.659	9.65	.658
Twenty-first day.....	6.94	.365	4.92	.505
(Adding effusion).....	.....	.517	....	.648

These lungs had been preserved, one in a closed jar in an ice-chest, the other in a closed jar at the ordinary temperature of the air, about 68°.

The former had exuded six fluid ounces of blood, which would give for average density of lung and blood, .517.

The latter had lost four fluid ounces of blood, which gives for average density of lung and blood, .648.

TABLE No. 5.

Density of Lungs of Five Sheep of nearly equal weight.

MODE OF DEATH.	Hours after death.	RIGHT.		LEFT.	
		Wt.	Den.	Wt.	Den.
1. Bled to death by severing carotids.....	42	5.83	.592	5.00	.645
2. do do	24	5.62	.700	4.08	.740
3. Bled to death after partial suffocation.....	4	9.90	.514	7.20	.655
4. Suffocated	24	16.39	.819	12.92	.861
5. Suffocated; distended with gas from decomposition....	48	17.48	.721	11.89	.660

TABLE No. 6.

Lung, with normal Amount of Blood, the root of the lung being ligatured before weighing.

	Weight.	Density.
Density while ligatured	10 oz.	.620
After removing ligature	10 oz.	.607
Difference between densities.....	.....	.013

TABLE No. 7.

Sheep Bled to Death, and Blood allowed to flow into the Trachea and Obstruct the Bronchial Tubes.

	Weight.	Density.	Loss by effusion.
Density of both lungs taken immediately	oz. 18.5	.528	oz.
Enclosed in sealed jar. Density, 10th day	17.5	.500	1
Enclosed in sealed jar. Density, 20th day	16.75	.424	1.75
Loss of weight of lungs		1.75 oz.	
Decrease of density.....		.104	

TABLE No. 8.
Densities of Human Lungs.

MODE OF DEATH.	Weight.	Time after death.	RIGHT.		LEFT.	
			Weight.	Density.	Weight.	Density.
	lbs.	days.	oz.		oz.	
1. Suicide.—One carotid and one jugular cut: body inflated with gas. No effusion	140	8	8.00	.762	6.75	.687.
2. Mrs. Budge.—Both carotids cut. Lungs alone ..	96	120	9.00	.819	8.00	.665
In right pleura, 8 oz.; in left, 5 oz. Effusion.....	96	120	17.00	.904	13.00	.692
3. Death by severing jugular veins.—No effusion	140	10	15.00	.575	15.00	.585
4. Death by drowning.—Lungs alone ..	160	240	12.50	.984	14.75	.983
In right pleura, 20 oz.; in left, 12 oz. Effusion	160	240	32.50	.995	26.75	.990
5. Death by drowning.—Little decomposed. Lungs alone	180	30	18.00	.766	18.50	.742
In right pleura, 8 oz.; in left, 12 oz. Effusion.....	.....	....	26.00	.838	30.50	.843

TABLE No. 9.

Sheep, weight about 140 lbs., bled to death lying on the back, with the head thrown back as in Mrs. Budge's case.

	Weight.	Density.
	oz.	
Density taken immediately.....	14.25	.750
Density taken 10th day.....	14.75	.590
Density taken 20th day.....	14.80	.560
	.55	.190

No effusion from the lung, but an increase of weight from absorption of water while taking the density.

Density decreased .190 in twenty days, from blood decomposition or generation of gases, showing an increase in weight of 0.55 oz, and a decrease of specific gravity of .190.

In one case of death from combined strangulation and suffocation both lungs weighed over 100 oz., while the drainage during decomposition was enormous, and hence the statement of the medical counsel Dr. Clark, of the "drainage of 5 to 8 oz. of bloody serum being not an unnatural quantity for one dying from hemorrhage" is *untrue* and not borne out by experiments.

In death from suffocation in the animal, the absolute difference in weight of the right as compared with the left lung, was in some instances as much as 6 oz., (Tables No. 4. and 5.) while in death from hemorrhage it did not exceed 1 to 2 1-2 oz. (Tables 1 and 5.) The healthy lung, dying with all the blood in it, constantly decreases in weight during the process of taking its specific gravity, from day to day,

induced by the leakage of bloody serum. (Tables 2, 3 and 4.) The lung which is bled to death, while undergoing the same process, increases in weight from the absorption of water. (Tables 1 and 9.) The tying of the root of the lung before the taking of specific gravity makes an average difference only of about .013. (Table No. 6.) The susceptibility of the right lung to congestion would account for the greater amount of fluid found in one pleural cavity than in the other, in Mrs. Budge 2 oz. in lung and about 3 in fluid. (Tables 4 and 5.) The escape of bloody serum which takes place after death from the lung, decreases its specific gravity in proportion to its loss. (Table 4.) The escaped bloody serum, when added to the lung at any time before decomposition of lung tissue, will give the approximate specific gravity at the time of death. (Table 3 and 4.)

The specific gravity steadily decreases during the drainage of serum, and the development of gases up to the time of decomposition of the lung tissue, (in one instance, as much as 104, see table 7, and .190, table 9,) after which it suddenly decreases, and the addition of the bloody serum (drained from the lung) to the lung itself, gives the original weight and specific gravity. (Table No. 9.) The comparative weight of the lung to the body depends entirely upon the mode of death.

The residual amount of blood in the brain at the time of death is decomposed before the brain is, and hence gases may escape where the vessels are cut, but the blood cannot escape in any appreciable amount.

Another point in reference to the left lung upon which Doctor Clark dwells with much emphasis. He states, "none of its connections had been disturbed, it was perfect." M Now, I stated at my examinations that both lungs were removed, the right we brought to Albany, while the left was returned to the chest—with reference, however, to the *left* I was mistaken, it being a matter not of vital importance either way, though Doctor Clark, and his legal associates, construed it with a wilful attempt to misrepresent. Be this as it may, I leave it for the profession to decide. Doctor Clark knows very well that, when he was in Albany, on his way to make the examination of this body, Doctor Porter and myself showed him all we had in the way of parts or parcels of this body with a degree of frankness that must now bring the blush of shame to his cheek, when he remembers how that frankness has been requited. His positive denial of all that occurred (of material importance) at that meeting of *entire strangers*, as we were, is too apparent, when it is known that his statement is that he "might have joked upon it (the conversation which took place at that meeting)." M* I think it a serious joke, and one which should not often be

*The following is the substance of the conversation as sworn to by myself as having occurred on this occasion. Doctor Clark (after looking at the chewed tongue) said, "You must not blame us, we are going up (to Greig, Lewis county,) to investigate this case very care-

indulged in among strangers. I acknowledge, in the first place, that, unlike Doctor Clark, I make no pretensions to physiological or pathological *lore*, and hence there may have been many points upon which I was not well versed; some points there were upon which I was doubtful, and many of them had no bearing, in fact, and were intended only to confuse the medical witness, and make him appear to a disadvantage on the stand. Of this, however, I do not complain.

Mr. Budge's legal counsel, I presume, were paid, as were also his medical, if we are to believe Dr. Clark's statement, which is, "I received \$250 for the first five days spent in the examination." (Post mortem.) "I have spent in all fifty to sixty days' in the examination of this case. I have received nothing but \$250, and have expectations of receiving more. (T.) Now, if the doctor receives pay in proportion to the first installment for the first five days, it would amount to the nice little sum of \$2,500 to \$3,000. Contrast this with the \$000 that we received from the county where the Judge (Bacon) declares a second inquest illegal, and hence void! Consequently all bills which otherwise would be audited by the authorities are dishonored. Neither Professor Porter or myself have received the first farthing as pay, either for time or for any of our disbursements. Hence, taking all the circumstances into consideration, it should not be expected that I, as an *humble citizen of a country town*, could cope with one so amply feed, and who "*lives in New York*," (is) *physician and surgeon—have been so since 1835, (was) between three and four years studying in London, Paris and Edinburgh*. I am Professor of Pathology and Practice of Medicine, and *Physician in Bellevue and St. Luke's Hospital*. I have *examined a great number of dead bodies, between 3,000 and 4,000*. (M.) I, on the other hand claim only a reasonable common sense, guided by a knowledge of the facts in the case—a just transcript of which I have endeavored to give, and leave the result to the enlightened decision of the scientific medical world.

And with you gentlemen of the society, I now leave this case; I have endeavored faithfully and fairly to present it, in all its bearing, and I desire the full expression of your views regarding it. To me it has been the most interesting medico-legal case that I have ever been called upon to examine, since the number and diversity of scientific points are worthy of the attention of a decided devotee to science; hence, I was in hopes that Doctor Clark would assist in the elucidation of the intricate questions, and reciprocate at least some of the frankness manifested towards him. We had no secrets in this case; we expected him to have none. As an instance of his treatment, I will simply mention, that Mr. Budge's counsel were desirous of showing that this cut might have

fully, and if they (the Medical Counsel) could find any *loop hole* out of which they could (help) this man (Budge) they should do it." M. In answer I said, "*very well! I did not know that this was the duty of a medical man.*" M.

Again, he denies that the fact sworn to by Doctor Porter, that part of the right lung was congested. Doctor Porter swore that "Doctor Clark said (to him in the Laboratory of the Albany College) that part of (the) lung was congested." M.

been made while the head was flexed on the neck. In a private conversation with Doctor Clark, I asked him how the cut could be made in the fifth vertebra, and through the cricoid cartilage at one stroke, since, if the head was flexed on the neck, the cricoid cartilage corresponds with the seventh cervical vertebra. His answer to me was, "you must ask me no questions now." And again, when he presented *a part of the case* before the Academy of Medicine, New York, for discussion—though Dr. Clark did not make any public objection to its discussion; still he *by his silence* sanctioned it. Why this fear of discussion? would not his case bear the light of science? if so, why hold it back from that light? I will answer, Dr. Clark knew full well it would not bear the light—that it (his statement) was based not on the "rock," but "on sand," which washed away by the light of a little common sense. This case in all its bearings forcibly reminds one of the famous case of the Earl of Essex (which all good authority acknowledge to have been a *murder*) and when one is familiar with all the attendant circumstances, he could say with Beck, (in his Medical Jurisprudence) p. 139, vol. 2. The inquest was plainly a sham, facts were suppressed, &c.; * * * the investigation was suppressed* in a very suspicious manner, and finally came to nothing, now * * * men do not take so much pains to conceal facts, unless they are aware that the *truth will hurt them*. * * * A surgeon is stated to have suggested to the coroner's jury, "that *the notches in the razor* were made by my lord against his neck bone." Now this case was presented by Dr. Hogeboom before the Grand Jury, reading the opinion of the old physicians from Taylor's Medical Jurisprudence, p. 212, and stopping short of Taylor's *views* in the case, where he says, to the above quotation, "forgetting before this (cutting into the back bone) could have been done by deceased, all the great vessels of the neck must have been divided!" †

The next case, at all like Mrs. Budge's, is that of Sellis. In speaking of this, Dr. Beck, p. 130, says: "The arteries on both sides of the neck were severed. Is it *possible* for a man to *inflict such a wound*? * * Again, his cravat was cut through; do men usually omit to take off the cravat when they cut their own throat?" *Apropos*, In the case of Mrs. Budge the

* So in this case, the first inquest occupied but a few hours, and the second was declared illegal, and hence void. (See Judge Bacon's Decision.)

The first Grand Jury (see Judge Morgan's charge,) were directed to take testimony of all persons *pro* and *con*, while for the people I believe no one but myself was examined. Professors McNaughton and Porter were subpoenaed too late, and did not arrive till the jury was dismissed.

On the part of the defence were Drs. Coventry, Hogeboom and Thomas, and, I think, some of the local physicians. For result, see legal part.

The second Grand Jury indicted the Reverend Henry Budge, though even Judge Turner in this instance charged the jury to take all medical testimony, *pro* and *con*, (see legal part), Judge Morgan discharged the prisoner on \$10,000 bail.

Again, on the murder trial, the prisoner, as well as medical and legal counsel, and nearly all who were in any way interested in having a verdict of acquittal rendered, boarded at the same house, while the judge and jury boarded at the same place.

† See Taylor's letter in reference to the division of vessels, &c., in Mrs. Budge's case.

evidence was that there was a piece of candle (in the candlestick) unburnt, showing that if Mrs. Budge cut her own throat, she first put out the light, laid down, covered herself up carefully, and then cut her throat—and this is done in the dark. Now then if there was any doubt as to Sellis having power to cut both carotids off, how much more would there be in a feeble woman like Mrs. Budge making a much more extensive cut, even cutting into the spine, and in the lying position at that. On this point, see Taylor's Medical Jurisprudence, p. 214, case of Lord William Russell: "the throat had evidently been cut while deceased was lying in bed; the blood was effused on each side of the neck only." This is the case referred to in his letter to me, in reference to *this case* (Mrs. Budge). (See page 42.) He states that "the wound in the throat must have been inflicted while the deceased was lying on her back, *i. e.*, in the recumbent posture; there was no blood on the anterior part of the body or night-dress. * *

The description of the flow of blood being chiefly on each side of the neck is in accordance with the views that the wound was inflicted while deceased was on her back."

I have now collated all of the cases from English and American works in which there is any analogy to this Budge case, viz., Lord William Russell, murdered by Corvoiser, 1841. (See Taylor, letter p. 42.) Sellis, murdered by the Duke; and the Earl of Essex in the Tower, for political reasons. (For the full *expose* of which we are indebted to Brandon.) These three cases were at first considered doubtful, but the developments of science and common sense have revealed *their true nature*, MURDER MOST FOUL instead of SUICIDE.

So in the case of Mrs. Budge. At first sight it was considered a case of *suicide*—*subsequently* when people allowed the sober second thought to prevail they began to doubt; and finally the number who believed that a *murder* had been committed continued steadily on the increase, notwithstanding the attitude of *certain parties*, threatening every one connected with the prosecution of this case with dire vengeance in some form if they dared to do their duty. Of this species of abuse I received my share.

Some of the local press were threatened with prosecution if they published even the testimony taken at the inquest; other parties of the press in *adjoining* counties seemed determined to keep the truth "under a bushel." The only one of them who were disposed to examine the subject dispassionately was the *Rome Sentinel*. (See copy of article forming a part of this paper.)

The last though not least important act in the drama was the presentation of what purported to be this Budge case to the Academy of Medicine, December 18, 1861.

Here again it is sought to shut off discussion from those who were familiar with this case in all its bearings. If by thus doing it was intended to obtain an *ex parte* expression of an opinion from that

honorable body, disappointment followed, since truth, that mighty element did and must always prevail, notwithstanding all the mal-influences which are brought to bear against it from various sources.

The important parts of the report of this case as presented by Dr. Clark on that memorable evening is worthy of some notice in this connection.* (In reference to the testimony of Doctors Coventry, Hogeboom & Thomas, it is merely an *echo* of Doctor Clark! hence requires no separate comment.)

In conclusion I will add my article published in the Philadelphia Medical and Surgical Reporter (Vol. 6, page 377) and inasmuch as it is a complete synopsis of the conditions attending death from carotid cutting (one and both including the pneumogastric nerves) I make no apology for appending the same as a matter of reference.

APPENDIX.

REPORT OF FIFTEEN CASES OF SUICIDAL DEATH BY CUTTING CAROTID ARTERIES.

The question is often asked, Why are the surroundings so diversified in suicides by cutting throat? In answering this question it will become necessary to examine the subject a little more in detail. In so doing I shall divide the mode and manner of death into those which involve:

1st. The arteries, (one or both.)

2d. Those which involve the veins and some minor arteries, with or without involving the trachea.

3d. I will analyze the causes of death of such other circumstances as govern the flow of blood.

1st. *In Suicides by Cutting Carotids.*—The appearances are uniform so far as the amount of blood lost, while the direction of the spiriting or flow of blood will be modified by the position of the body while the cutting is being done. When any large artery, such as femoral and carotid one or both is cut, death takes place *inevitably* from *hemorrhage*. This is the law of nature which applies invariably to the human subject, the exception is where the artery is secured by ligatures. *Fainting* does not *prevent* the flow of blood from continuing until life is extinct. Instance the invariable uniform amount of blood which flows after decapitation and in slaughtering of animals. I have collected about one hundred cases of suicides and attempted suicides by throat-cutting; in which a very small percentage of them have succeeded in cutting the carotids; many of them presented most frightful cuts and even a succession of cuts, which would seem to involve all the important vessels, but which (when examined by a careful surgeon or physician) were found not to involve the large arteries. Some of these were six and even eight inches in length, and still the wound did not prove fatal. These cuts are mostly in the line of the inferior maxillary, and some of them opening into the pharynx or trachea.

* I have added such portions of his statement in the way of notes as I thought might be interesting to the profession.

With reference to those which involve the carotids, I shall deem it of sufficient interest to the profession to give a concise and detailed description of such by themselves, inasmuch as there are no articles devoted to this subject. The few cases which might happen to have been subjects of medico-legal inquiry, are not sufficient to elucidate the many points in this inquiry—while the *others* which only involve the *veins* and *trachea*, I will divide into

1st. Such as die from *asphyxia* induced by *insufflation* or running of blood into trachea.

2d. Such as die from *syncope*.

3d. Such as die from the excessive *loss* of *blood*.

4th. Such as die from *introduction* of *air* in the *veins*.

In all these forms of cutting, where veins only are involved, the blood *runs* out as observers say. It is this form of cutting which enables the suicide so to arrange the surroundings that there shall be no soiling of adjacent objects. *Instance*, sitting on the side of the bed and leaning over the wash dish; sitting on a privy seat and catching the blood in a spittoon; kneeling in a large chest or dry goods box, and leaning the head over and allowing the blood to flow into the dirt in the cellar. I find the greater number of suicides make more than one attempt—some make two, three, four, and even five efforts—and still sometimes fail to complete the work. I find one suicide taking two razors and a rope, fearing the first might fail. In fact I find few cases where there was not more than one attempt made at cutting, or in other words few make an incision sufficiently deep at the first attempt to sever the arteries or destroy life. It is *that* class of suicides, where the carotids are cut, to which I wish to call especial attention

In all these cases where the suicide was standing or sitting, and the room a small one, we find that the furniture, room, and clothes of patient, walls, and in some instances, the ceilings were covered with blood, while where the room was large, the jets of blood assumed a parabola, and blooded the ground or floor for several feet around the spot, leaving a pool of blood where the cutting was done. (See case 4.)

On the contrary, if the cutting is done while on the knees and elbows, the jet strikes the floor near the head, and little blood is found on the person of deceased. (See cases Nos. 6, 9, 15.)

In *every* case of throat-cutting, whether arteries or veins were severed, the instrument used, whether razor or knife, was covered with blood, the same is true of the hand and wrist, while, if they were in the sitting or standing position, their clothes were saturated with blood.

In no case have I found a female cutting more than one carotid, while the large majority of suicides by throat-cutting were males.

In every instance where any observations were made, the wound was found dry a short time after the cutting, and there was found no oozing of fluid-blood from the cut vessels.

The eyes and mouth, so far as note was made of the fact, were open.

The tongue was never bitten or laterally chewed, so far as any note was made of the fact.

Convulsive movements of the limbs, the same as is observed in animals slaughtered, were not uniform, from the fact, *perhaps*, that many of these cases occurred in the standing position, and many of them stood until they had bled out.

In *none* of the cases can I *find* that the *soft* parts (including trachea) were *positively* divided at one stroke of a butcher's knife or razor, and in none can I find that the cervical bones had been cut into at all.

In no instance did the suicide lay on the back while the cutting was being done.

Sitting, standing, or kneeling was the universal position according to my observations.

In suicide by cutting of carotids, the external appearance and examinations by post mortem evidence, were entire exsanguination including the lungs; suicidal cuts in the line of the inferior maxillary and above the os hyoides, are more easily made, and inasmuch as they open into the fances, are of necessity longer, deeper and more frightful in appearance, but no more destructive to life.

It will be seen that the greater number stand while the cutting is being done. In the fifteen reported cases of carotid cutting, nine were standing, three kneeling, and three sitting on the side of a bed. This is about the rates of positions in the hundred cases, while these three are the only positions in which any attempt has been made at cutting. The percentage of those who cut the carotids to all who attempt self-destruction by this mode, is about one in about twenty to thirty.

Case No. 1.—For the following very interesting case I am indebted to Dr. Barent P. Staats, of this city. The subject, a male, aged forty, weighed one hundred and sixty pounds, quite muscular. The room eight by twelve, and ten feet high, contained bed, chairs, etc. While sitting on side of bed, cut his throat with a razor (am not positive with which hand the cutting was done), slid off and fell upon the floor. The cut was in a curvilinear direction, and in a line with inferior maxillary and above the thyroid cartilage, cutting more on the right than on the left side; one carotid cut, pharynx opened, wound about five inches. As he lay on the floor, the razor, which was covered with blood, fell from his hand; the ceiling, and sides of the room, the bed and body clothes, face and hands were covered with blood. The floor contained a large coagulum of blood in which he lay. He could not have lost less than sixteen to twenty-four pounds of blood; bound up the wound some two hours afterwards, and found no blood oozing from the vessels; in fact the cut was dry, and the body was virtually bled out. The face, body, and lips were very pallid, ashy, and quite exsanguined. He had much convulsive action of inferior extremities. I saw him before he was dead.

Case 2.—For the following exceedingly interesting case, I am indebted to D. S. Young, M. D., of Cincinnati, Ohio. The subject, a German male, aged forty; weight, one hundred and sixty; muscular; with a butcher's knife, sixteen inches long and much nicked, cut, haggled, and mutilated his throat (while standing) very much, making several distinct efforts, cutting off all the soft parts, including both carotids, both jugulars, trachea, esophagus, etc., down to the bone. He was standing when the cutting was done, head thrown back, and retained the knife within the grasp until he fell, which was forward and partly on his face. The room was a cellar, attached to a pork packing establishment, about ten by twelve, by seven feet high. The blood spirted all over the ceiling and sides of the room. His clothes were saturated with blood; his head, face, hands, and knife were covered with blood. The body seemed entirely exsanguined; face, lips, and body were as white as alabaster. One hour after, no blood oozing from the cut vessels; the cut vessels seemed dry. From the quantity of clotted blood on the floor, walls, and person, I judged that there was not less than sixteen to twenty pounds of blood lost.

Case 3.—The following case is one of special interest, from the amount of blood lost and the distance that he walked after the cutting was done. It occurred under the observation of Dr. Willard, of Berne, Albany county, New York. The subject, a male, aged forty, weight one hundred and fifty pounds, full habits. He went to a garret with a rope and razor; with the razor he cut his throat, while standing about four feet from garret stairs. From this point he descended two pairs of stairs, walked the whole length of lower hall (about thirty feet), out back door, walked outside 3 or 4 steps, leaned against side of house for a moment, and finally sagged down, like one in a faint. Here was found a large pool of blood; and when taken up he had bled out. After some little time, body was carried into the hall, when it was not even emitting blood enough to stain the carpets. The first dash of blood struck the side of the halls, stairs, and stairway; the stairs and sides, and the whole track from the garret to where the body lay was spattered and thoroughly bedaubed with blood; in fact, the halls and stairs were drenched with blood; the blood running like a penstock, by jerks. His wife stood in front door and saw him coming down the second flight of stairs. Her screams brought others to her assistance. Front of body, hands, and clothes were covered with blood, also the razor, (which was retained in the grasp of right hand until he fell at the back door,) hands and face were covered with blood.

The cut was just below the thyroid cartilage, and severing a piece of the same, was large, five to six inches, commencing on left side of neck, back of sterno-cleido mastoid muscle, cutting through all the soft tissues of that side, including trachea; œsophagus cut partly through; the carotids on right side not cut, on left side entirely cut off; the vertebræ not cut. I saw the body soon after the accident, and sewed up the wound some four hours after. There was no blood oozing from the wounded vessels; it hardly soiled the fingers, but left a fleshy smell on them. The amount of blood of course is speculative; the quantity was very large, more than I supposed was contained in any person.

Case 4.—For a very full and concise history of the following very interesting case, I am indebted to Doctor Walter Boothe, of Booneville, Oneida county, New York, of which the following is an abstract:

D. S., aged sixty, weight one hundred and sixty, of nervo-sanguine temperament; for some time he had been somewhat despondent and gloomy. He was standing near the railroad track, and just as the train passed out of the depot, he drew a razor from his pocket, threw back his head, and made an incision, severing all the superficial structures and jugular veins. The blood flowed moderately; seeing persons approaching, he made a second desperate cut, and so exactly* in the course of the first one, that no appearance of two incisions was visible on examination. The incision commenced on the left side, two inches below the lobe of the left ear, extending across the neck, in a curvilinear direction, above the thyroid cartilage, opening into the pharynx, cutting all the soft tissues in front of the vertebræ, but not cutting into its covering, and terminating one and half inches below the lobe of the right ear. The right carotid was entirely severed; the left one, nearly. The blood spirted laterally and in front four to five feet, in a parabolic stream, covering the clothes in front of his person very much with blood, as was also his right hand and the razor covered with blood. Not more than ten minutes supervened from the first incision to the time

* In a recent conversation with Dr. Boothe he says that there was *scarcely* an appearance of two incisions.

of death, which took place with only slight tremors. The eyes and mouth were open; tongue not bitten. Since the receipt of the doctor's communication, I received information from a reliable source that the loss of blood was very large, sixteen to twenty pounds, and that the blood flew in jets for at least eight feet laterally and in front, and at an angle of forty-five degrees from the body, covering the board walk and ground with blood; also a large pool of blood where he stood. Not less than sixteen to twenty pounds of blood was lost, judging from the appearances and clots on the ground.

Case 5.—For the following case, I am indebted to Dr. P. P. Staats, of this city. The subject, a male, aged forty, rather corpulent, weight one hundred and fifty, cut his throat (while standing) with a razor; he soon fell on his back. The cutting was done with right hand and above the thyroid cartilage, cutting through carotid, trachea, and all the soft structures, but not involving the vertebræ.

The blood spirted six to eight feet from where he stood, leaving a large pool of blood on the floor. The amount of blood, of course, was very large; I think twelve to sixteen pounds, from the fact that the body was left exsanguined, and also the condition of the floor and his clothes, which were saturated with blood.

Case 6.—Dr. C. P. Staats.—T. O., aged 25, weight 140 lbs., muscular.

Position.—Cutting done while kneeling, and his face imbedded, and fell down on face; this was in a straw loft, and straw about five feet in thickness; cutting done with right hand, which, with the right arm were covered with blood.

Wound.—Commenced at angle of left jaw, and made three distinct cuts: first, one cut was in the carotidian direction of chin at five inches, mostly on left side; second, below, mostly on left side, and four inches just below the first, and mostly a skin cut; third cut commencing at the angle of the first cut, and extending obliquely downward across the thyroid cartilage, (but not into it,) severing the carotid on the left side.

Blood.—Chin, neck, and breast were covered with blood, right hand, (inside and out,) wrist and sleeve, (five inches from hand,) were covered with clotted blood; razor left in wound, and dropped out when he was lifted up. The blood stained this five feet of straw, also two floors and two ceilings and floors; and on this lower floor, at least one pint of blood was found. I judge there to have been at least three gallons of blood lost, from the condition of the stairs, floor, ceilings, &c.

Face was bluish white, lips like marble, tongue contracted and shrivelled, and not bruised or bitten.

Eyes and mouth open.—Sewed wound about an hour after cut; it was covered with dry clotted blood, and no oozing from divided vessels.

The straw which was close about his neck prevented the blood from spirting. Breast and clothes on front of body were saturated with blood to the inferior portion of sternum, and his shirt rolled down some distance below his neck.

Face looked ghastly, and not like one asleep. The razor was nicked.

Case 7.—For the following case I am indebted to Dr. Burton, of Troy, N. Y. The subject a female, aged 30, weight 120. She was standing in front of a mantle looking-glass, when she cut her throat with a razor, and soon fell on her left side.

The cut was made by the right hand, and cut commenced on the left side, cutting the sterno-cleido mastoid muscle together with nearly all

the soft parts of the left side of the neck, also the carotid, and through the trachea below thyroid cartilage; the blood spirted out in jets over mantle, glass, etc., covering the same; all the clothes on the left side of the body were saturated with blood, and bloodying neck, breast, hand and razor, most thoroughly, and leaving a large mass of blood on the floor; at least 12 lbs. of blood was lost; mouth and eyes open, tongue not bitten; when the wound was sewed up, the edges were dry, and of course no oozing of blood from the vessels cut; an examination, post mortem, revealed entire emptiness of the circulating system.

Case 8. For the following interesting case, I am indebted to Dr. Thorn, of the Marshall Infirmary, Troy, N. Y. The subject, a male, æt. 50, full habit of body. The room was about 12 by 20 feet, and contained a bed, chairs, and looking glass, near which he was standing when the cutting was done; from this position he staggered about nine feet, and fell on the bed. The cut was mostly on the left side, commencing just behind the angle of the jaw, cutting on a line with it to and through trachea, and severing the carotid. The instrument, a razor, was held in the right hand, and was not retained in the grasp. The blood jetted several feet, and struck the wall, which was spattered with blood, while the bed where the body lay, and body clothes were saturated with blood—the right hand, arm, face, and razor, were covered with blood; the quantity of blood on the floor, walls, bed, furniture, and body clothes, of course, was speculative, but was very large, as the body was exsanguined, and the edges of the wound dry, no oozing of blood from the cut vessels.

Case 9.—For the following exceedingly interesting case, I am indebted to Dr. Benjamin E. Bushnell, of Little Falls, Herkimer County, N. Y. Suicide, a male, æt. 55, weight 150, lean habit.

Position.—When first seen, he was on his knees and resting on his left elbow, head near the floor; he had then only lost about one-half pint of blood; when I arrived, he lay on his left side, with the left side of his head in a pool of blood, and gasped once or twice. I found that he had made two cuts, one across the thyroid cartilage, very slight; the second commenced under the left ear, and extended obliquely downwards and forwards across the thyroid cartilage, cutting jugular vein, carotid artery, but not the trachea. The right hand was covered with blood, little on the clothing, as from position of the body the blood poured directly on the floor; two razors were found near by, one directly in front, and a little to the right, covered with blood, the other not bloody. With regard to the quantity of blood lost, it is difficult to say how much, as it was a loose floor, and the blood ran freely through it, but from appearances, should say there was a large amount lost. He evidently died of hemorrhage. Upon examination of the abdominal cavity, the blood vessels were empty. The examination of the wound was made but a few minutes after death, and there was very little oozing from its vessels at the time.

S. N. Sherman, M. D., of Ogdensburgh, N. Y., now member of Congress and Surgeon of the Thirty-fourth Regiment of New York State Volunteers, sends me report of the following cases, which I have read with interest.

Case 1.—Male, age forty-five, weight one hundred and seventy pounds;

while standing with head turned to the right, made two distinct efforts to cut his throat with a butcher's knife.

First cut extending through the skin, cellular tissue from the angle of the left inferior maxillary downwards across the neck, not so far on right side as left.

Second cut was on the right side, between thyro-cricoid cartilage, and made by a back hand movement, severing the trachea, both carotids, and most of the soft parts of the right lateral position of the neck, and extending about six inches in length, and nearly square across the neck. The blood spirted all over the ceiling, (9 feet high,) and about eight feet in every direction, covering his hands, face, etc., completely, and saturating the clothing on the body, losing not less than sixteen to twenty-four lbs. of blood. The knife, (sixteen inches in length,) lay on the floor, and covered with blood. The face, lips, etc., (after being washed,) were ashy pale. He remained standing for some seconds after the cutting, then fell forward on his face, when active, convulsive efforts supervened, lasting some seconds. The tongue was not bitten; sewed up wound within an hour, and there was not enough moisture to soil a sponge, no blood oozing from divided vessels.

Case 2.—A female, aged thirty-five, weight one hundred and ten pounds; was sitting on side of bed; cut throat, commencing posterior to the mastoid muscles of left side, just below the lower lobe of ear, extending in a curvilinear direction, on a line with the lower jaw, terminating one and a half inches lower on the right than on the left side, severing the left carotid, and opening into the fauces above the thyroid cartilage, but not the cervical bones. She slipped off the edge of the bed to the floor, and lay partly on her face, which rested across the right arm. The blood spirted about ten feet in every direction, saturating her clothes, and the carpet on the floor was saturated with blood; a large pool of clotted blood, in which she lay immersed, not less than sixteen to twenty-four lbs.; her hands, face, and razor, were covered with blood. Razor had evidently slipped out of the right hand as she lay on the floor, and the eyes and mouth were open, and tongue not bitten. The clothes of her person were somewhat disarranged, as if convulsions had supervened. No blood oozing from divided vessels, nor was there any blood moisture at the wound one hour after the cut was sewed up.

Case 3.—Male, aged thirty-six, weight one hundred and eighty; while standing in front of looking-glass, (in a room about ten by ten, and eight feet ceiling,) with his head thrown backwards, cut his throat with a razor. Cut commenced on left side, extending across the neck in a line with the chin, cutting both carotids into fauces, etc. The blood spirted over the glass, ceiling, sides of the room, table, chair, face, head and hands, (right and left.) He ran round the room, leaving prints of bloody fingers on the sides of room, and finally fell on his face, where there was a pool of blood. His clothes, also, were saturated with blood; the entire loss of blood could not have been less than sixteen to twenty-four lbs. The razor, handle, and blade, were covered with blood, and lay on the table under the looking-glass; mouth and eyes open, and no oozing of blood from cut surface, which was dry. He had convulsive movements.

Case 4 and 5 were males, laboring under delirium tremens. The cuts were large, severing the carotids higher on the left than on the right side. He did not see them until they were in the dissecting room, and

hence could only say that their bodies were entirely exsanguined, and not blood enough oozing from the wounds to soil a pocket handkerchief; lips were completely blanched, while no blood flowed on dissection; tongue not bitten.

Case 13.—Dr. J. P. Boyd, of Albany, N. Y., communicates the following interesting case:

Male, aged forty, weight one hundred and forty pounds, spare. Cut throat, (supposed sitting on edge of bed,) severing left carotid, wind-pipe and nearly all soft parts on left side of neck; when found, was on his back in bed; clothes much disturbed; wound gaping; mouth open; room about seven by eight feet, about eighteen feet high, and contained bed, chairs, etc. Sides of room seven to eight feet from the floor were covered with blood, spirted from the vessel; bed, bedding, body, and clothing were saturated with blood; head, face, hands, etc., were covered with blood; did not see instrument; no blood oozing from wound or cut vessels; they were dry. It seemed to have bled out. There was evidently a large flow of blood, and death was evidently attributable to that cause.

Case 14.—I am indebted to Dr. Duane, of Schenectady, for the following very interesting suicide, the extent of the cut makes it especially so. The subject, a male, age forty five, weight one hundred and eighty. He was standing, when the cutting was done, and soon fell on a straw bed, (which was on the floor,) with the head resting on a feather bed, rolled up, and laid on a straw tick. The cut below the thyroid cartilage was long, severing both carotids, trachea, etc., extending farther to the left, than the right side, cutting only to the mastoid muscles of right side, while on the left it was severed, (no bones cut). He had two razors, one in his pocket, and the other retained in the grasp of the right hand, and covered with blood, as also the right hand and wrist.

It was an ordinary sized bedroom; bed on the floor. The blood spirted all over the walls, floor, bed, body, clothing, etc. There could not have been less than eighteen to twenty-four pounds of blood lost, judging from the condition of the apartments.

The mouth was open; the chin dropped.

Case 15.—Dr. Elwood, of Schenectady, sends me the following case: Subject, male, age about thirty-six, weight about one hundred and fifty; cut his throat while on his knees and elbow, and fell forward on his face. Cutting done with right hand, and was mostly on the left side; commenced two and a half inches back of carotid, severing it completely; cut above the thyroid cartilage. The bedroom about fourteen by fourteen. The floor received most of the blood, owing to the position of the body; still the body, also, the right hand, razor, and face, (ghastly and bloody,) were covered with blood. The amount of blood lost was at least sixteen lbs., (two galls.,) judging from the condition of the room. Eyes and mouth open.

Article 3. Medico-Legal Contributions. By CHARLES H. PORTER, M. D., Albany Medical College.

I. THE DETECTION OF ARSENIC.

II. CASES OF ARSENICAL POISONING.

Intending in this paper to report a number of cases of arsenical poisoning, it has been deemed advisable to preface them by an account of the methods pursued for the detection of the poison. This is done for the reason, that when the details are given, each one may judge for himself as to the degree of reliance to be placed upon the results, and also, because medical men generally are not acquainted with the minutiae of such examinations.

It may also be said that while the special works on poisons contain detailed information regarding the various tests, they are deficient in any systematic method of procedure applicable to those cases where the particular poison is unknown.

Aside from text books on chemical analysis, and a single one on the detection of poisons, there is nothing easily accessible to medical men in this country that furnishes detailed information upon this subject. The design of the first part of this paper (which bears no claim to originality, but is a compilation from various sources), then, is to give the method pursued in the investigation of the cases hereafter reported—a general mode of procedure in all cases of metallic poisoning (ensuring the detection of the various toxic agents), with special reference however to arsenic; and again to give a systematic plan, whereby the material can be most properly prepared for obtaining the various tests, together with a brief description of the more characteristic chemical reactions for arsenic.

PART I. THE DETECTION OF ARSENIC.

I. *General Considerations.*

1. *Chemical evidence.*—The chemical evidence in cases of supposed poisoning is generally regarded as the least fallacious of all branches of proof. Owing to the labors of Orfila, Fresenius, Otto, Stass, Flandin and others in the detection of poisons, the subject has become so far developed, that in the majority of cases a charge of poisoning may be satisfactorily decided by the results of a chemical examination. This opinion is entertained not only by professional chemists, as well as by intelligent medical men, but also by courts of justice, so that commonly the chemical detection of a poison is deemed necessary before a conviction can be obtained in a charge of poisoning.

But it must be said, that not unfrequently too much reliance is placed upon chemical evidence, many deeming it unsafe to convict where this evidence is wanting. This is however a narrow view, and indicates an ignorance of toxical science. Simply because poison is found in certain remains, it does not necessarily follow that it was the cause of death; the symptoms and post mortem appearances may prove the contrary; nor does the absence of poison in the dead prove that death was not occasioned by poison.

In this country, few if any individuals have been convicted of the crime of poisoning, where the poison was not supposed to have been found in the body. In England, the celebrated Palmer case offers an instance to the contrary, and others might be mentioned. There seems to be no good reason (where other evidence is positive,) why a conviction should not be obtained, even in the absence of chemical evidence; all that is necessary in such a case, is to satisfy a jury that the deceased died from poison, and this occasionally may be done without, as well as with the class of evidence we are speaking of.

The detection of poisons in the tissues generally, as well as in the intestinal tract, and in the food and medicine given, furnishes the most complete chemical evidence of poisoning; if only found in the stomach or in the food or medicine, the testimony is weakened because there is a possibility that it might have been placed there subsequently.

There are certain fallacies which must be guarded against in receiving evidence derived from chemical examinations in medico

legal investigations. It is not to be supposed that in all cases such examinations will be made by those most competent, and hence, besides the inherent difficulties of such researches, it is necessary to insure ourselves against the ignorance and unskillfulness of the operator. Thus we may allude to the meagreness or absence of characteristic tests for many organic poisons, and the difficulty of separating them from organic mixtures; again, and this is more pertinent to the subject of this paper, it has been ascertained that many of the reagents, supposed to be pure, are often contaminated with poisons.

Thus, arsenic is often found in zinc, sulphuric acid and chlorohydric acid, and in other materials used in toxical investigations. The knowledge of this fact causes us to doubt whether the arsenic discovered in minute quantities in many reported cases, was contained in the remains examined or in the chemicals used. The above remarks illustrate the great danger there is in relying upon the supposed detection of minute quantities of poison, in the absence of physiological and pathological evidence, and without a careful examination by competent authority of the methods followed in operating upon the materials examined.

Before treating of the methods of analysis, a few remarks may be made concerning the

2. *Physical examination of materials for analysis.*

Food, contents of the stomach, &c.

By a careful physical examination of these substances poison may often be discovered. The best mode of procedure is to place a part of the suspected mass into a glass vessel such as a beaker, and after adding water, stir the whole with a glass rod. After allowing it to settle, pour off the water, without disturbing the sediment. To this water should again be added and the operation repeated. In the bottom of the vessel may often be seen arsenious acid in the form of small white particles, which feel gritty and grate under the glass rod. These are to be taken out and dried. As simple tests, one or more may be gently heated in a glass tube sealed at one end, and another in a similar tube with carbonate of soda. If in the first tube is produced a white crystalline deposit, and in the second a black metallic mirror, it is pretty decisive evidence of the existence of arsenic.

Stomach, intestines, &c.—If the intestinal tract is to be examined, it should be completely opened, and its appearance carefully observed.

Very often particles of arsenious acid may be seen adhering to the mucous membrane, which may be tested in the manner just mentioned.

3. *Division of materials for analysis.*—Mechanical division facilitates chemical action; it is therefore proper to minutely divide organic substances before commencing their analysis. This may be done by a pair of scissors or small shears, but where a considerable quantity of animal matter is to be operated upon, a small new "meat-chopper" (consisting of an iron cylinder containing a set of revolving knives) may most conveniently be employed. By such an apparatus, in five or ten minutes the various parts, as the stomach, intestines, liver, kidney, &c., may be converted into an almost homogeneous pulpy mass, and thus be in the best condition for being acted upon by chemical agents.

4. *Necessity of a preliminary examination.*—From what has already been said of the fallacies of chemical evidence, and the nature of the errors that may arise, it is evident that in cases of suspected poisoning, the chemical examination ought only to be entrusted to experienced and reliable men. No amount of labor ought to be spared in such an examination, in obtaining reliable results, for an error may cost a human life, and from the fact of impurities of a poisonous character occurring in our chemicals, &c. there exists in my opinion, a real necessity for a thorough preliminary examination. Portions of animal or vegetable matter as the case may be, equal in weight to the articles afterwards to be examined ought to be taken, and subjected in the same vessels and apparatus to the same processes, by the use of portions of the same reagents in as large a quantity as will afterwards be used in the actual examination.

If this examination shows the vessels and chemicals to be pure or free from poison, the analyst may at once proceed to the examination of the suspected material; and if otherwise, he will detect the impure materials and can replace them. Only after this procedure can the real examination be properly undertaken, the results will then be entitled to confidence, and all doubt will be removed from the mind of the examiner regarding the source of the poison, in case any is found; it will besides free him from many embarrassing questions when in the witness box, which otherwise might seriously affect him.

It may be stated here that it was probably in consequence of arsenic occurring in the reagents employed in the investigations,

and the omission of their preliminary examination, that led to Orfila's erroneous assertion that arsenic is a normal constituent of the human body. Because of this omission in the case of Mrs. Wooler, (Durham, Eng., Winter Assizes, 1855,) doubt was thrown on the scientific evidence by reason of the use of chlorohydric acid containing arsenic; the discovery of this impurity was not made until after the analysis was completed.

In every case investigated by me, a preliminary examination has been made in the way just mentioned. It is true that but a few poisons, of which the chief is arsenic, are likely to occur in the materials employed in analysis; occasionally, however, others are present, and as a general rule, therefore, it is advisable to make a preliminary examination.

5. *Separate examination of each part.*—It is always desirable that each part be separately examined, as for instance, the stomach, the contents of the stomach, the small intestines, the large intestines, the liver, &c., for often by proceeding thus, important information may be obtained. It is best also to consume in the first examination but a part of the material (after the whole has been finely divided and intimately mixed)—two-thirds for example—so that in case of accident an examination may still be made; and to this there is usually no objection, since in almost all cases, if the poison can be detected in the whole it can be in the part mentioned, and in sufficient quantity not only to identify it but to make the greater number of the confirmatory tests.

6. *Remarks on the method to be pursued.*—It is not difficult to identify the various metallic poisons when they are free from other substances, by the application of a few simple tests. Where, however, the poisons are in admixture with organic matter, the problem presented is of far more difficult solution, for the organic substances may prevent, modify or conceal the characteristic chemical reactions which otherwise would take place upon the application of the different reagents. As most often the substances presented for toxical examination are articles of food or portions of the human system, toxicologists have devised many methods for the destruction or separation of the organic matter without any loss of the poison. The method we prefer is that proposed by Duflos? and elaborated by Fresenius and Babo. I speak from a somewhat large experience, and can say that, taking everything into consideration, it is far more reliable and

satisfactory than any other that I have met with. In many cases forwarded to me for examination, I have not been informed of the circumstances attending the death, and have therefore sought for a method by which (after determining as far as possible the absence of organic poisons,) none of the metallic poisons could escape detection, and have adopted that alluded to.

If the problem was always the simple one, "is arsenic or is mercury contained in these remains," other processes might possibly be more advantageously employed. Taylor, in his work on poisons, speaks depreciatingly of Fresenius' and Babo's method as being elaborate and exhaustive, and says that (according to Orfila) its complications surpass all credibility. To this it may be replied that the process which the most distinguished chemists of the world approve, as Otto, Bocher, Wohler, Silliman, &c., and which stands the test of years, must have great merit in it or it would not be thus supported; in their opinion it is evidently the best that has been devised.

It is true that the process demands a considerable amount of chemical knowledge and skill in manipulation; it is elaborate and exhaustive, it is also accurate and reliable, and can be satisfactorily applied in any case.

It may be said that in many cases a physician or other person, who has not applied himself especially to the detection of poisons, may satisfactorily determine their presence; undoubtedly this is true, but it seems to us most prudent, in cases involving a human life, to have the examination conducted by those who are experts and have made toxicology a specialty, for thus the fallacies attending all chemical processes in the hands of the inexperienced are removed.

We will now briefly give a

II. *General method for the destruction of organic matter in the presence of the metallic poisons.*

1. *Decolorization and solution.*—If much water is present in the matter to be examined, it is desirable to concentrate it in a water bath, or at a temperature not exceeding 212 deg. F.; it is then to be treated as indicated below.

Solid matter, such as the liver, stomach, &c., after being finely divided, is to be placed in a porcelain evaporating dish, and mixed with chlorohydric acid and water, until it forms a thin paste. It is neither desirable nor necessary to use a very strong

acid; an acid having the density of 1.11 is sufficient. The dish is then to be placed upon a water bath, or over a lamp, and gently heated at a temperature not exceeding 180 deg. F. Chlorate of potash is then to be added, in portions of from 10 to 20 grains, every five minutes or thereabouts, occasionally stirring the mixture until the whole is converted into a light yellow homogeneous liquid, when it is allowed to cool. (The fatty matters are with difficulty destroyed, nor is their decomposition generally absolutely necessary: they solidify upon cooling, and are easily removed.) The liquid is now to be placed upon the sand bath and heated until the smell of chlorine has disappeared. By the action of the chlorohydric acid upon the chlorate of potash, chlorine compounds are evolved, which decompose the organic matter, and convert any arsenic that may be present into arsenic acid. After cooling, the liquid is to be filtered, and the filtrate carefully preserved; the residue remaining upon the filter is to be thoroughly washed and the washings collected in a separate vessel, if in large quantity they may be evaporated to the bulk of 3 or 4 ounces, and are then to be added to the original liquid. (The residue may contain sulphate of lead.)

2. *Treatment by sulphydric acid, (H S.)*—The mixed fluid is poured into a beaker glass, and a slow stream of washed sulphydric acid passed through it for twelve hours, it is then to be allowed to remain at rest for the same length of time. This treatment precipitates any arsenic, mercury, antimony, copper, &c., that may be present in the form of the corresponding sulphid, together with a portion of organic matter. The liquid is afterwards filtered and the precipitate washed until a small portion of the washings gives no precipitate with nitrate of silver, thus indicating the absence of chlorine—(the filtrate and washings may contain zinc, &c.)

The production of a precipitate by sulphydric acid does not of itself indicate that any metals were in solution, since organic matter, even if alone, is precipitated under these circumstances.

3. *Purification of the precipitate.*—It is to be particularly noted that in order to obtain satisfactory results, all the materials used in the following operations must be free from chlorine, otherwise a portion or the whole of the arsenic, according to the quantity present, will be converted into the chlorid and may be volatilized. If the precipitate by sulphydric acid is of a yellow color, it may contain arsenic, antimony or tin, if of a dark color

approaching to blackness it may contain copper, lead, bismuth or mercury together with the metals first named. It is now to be treated with ammonia and sulphid of ammonium, which will dissolve the sulphids of arsenic, antimony and tin. The ammoniacal solution may be poured upon the filter (stirring the precipitate meanwhile with a feather or with a glass rod covered with caoutchouc) until all soluble matter is removed. The precipitate is then to be washed and the first filtrate, mixed with the washings is to be evaporated to dryness at a moderate temperature. The dry residue is to be treated with fuming nitric acid and gently evaporated. This operation is to be repeated until the residue while moist is of a clear yellow color. A few drops of water are to be added and gradually a solution of carbonate of soda to neutralize the acid. A mixture of two parts of nitrate of soda and one part of carbonate of soda is then added, the whole is carefully mixed together and dried, then placed in a porcelain crucible and gradually heated to fusion. By this operation all organic matter has been destroyed and the metals present oxydized; the antimony is converted into antimoniate of soda, the tin into binoxide of tin and the arsenic into arsenate of soda; the latter only is soluble in cold water. The fused mass when cold is therefore treated with cold water, and the solution placed in a porcelain dish, sulphuric acid is then added until the liquid is strongly acid. This expels any nitric and nitrous acids that may be present, it is then evaporated and when quite concentrated, more sulphuric acid is added. If no red fumes appear upon the last addition it has been added in sufficient quantity; if they are produced the operation must be repeated. The solution finally must be evaporated until the white fumes of sulphuric acid are given off. Any arsenic present is now in solution as arsenic acid. It is desirable in order to determine the weight of arsenic present to convert it into arsenious acid; this is readily done by adding concentrated sulphurous acid solution, until its odor is distinctly perceptible, then evaporating the liquid until its odor disappears.

III. Method for determining the weight of arsenic and making the characteristic tests.

1.—Determination of the weight of arsenic.

The solution obtained as just directed is to be diluted with water, placed in a beaker, together with the washings of the porcelain dish, and a stream of washed sulphydric acid passed

into it. If any arsenic is present, it will be precipitated in the form of tersulphid of arsenic.

This is to be collected on a small filter (previously dried at 212 deg. F. and weighed,) then thoroughly washed, and dried at the same temperature as before and again weighed. The increase in the weight of the filter represents the amount of tersulphid of arsenic present.

Or the precipitate may be collected on a small filter thoroughly washed, then dilute ammonia added drop by drop, until it is all dissolved; the filtrate and the washings are to be collected in a weighed dish and evaporated to dryness and weighed as above.

Each part of tersulphid of arsenic is equal to 0.8049 of arsenious acid, or to 0.6098 of metallic arsenic.

Thus supposing the weight of the sulphid of arsenic was 0.345 grains, this is equal to $(0.345 \times 0.8049 =)$ 0.277 grains arsenious acid or to (0.305×6098) 0.210 grains metallic arsenic.

2. Conversion of the sulphid of arsenic into compounds suitable for testing.

It is now desirable to make the most characteristic tests for arsenic, some of them are popularly known, and it is expected by courts of justice that they shall be made when arsenic is found in the examination of a case of suspected poisoning, there are others less known, but at least equally distinctive. Now, although it is not necessary to make them all to satisfy a chemist of the presence of arsenic, yet, as in the majority of cases, there is a sufficient quantity present to make all those tests, which are deemed satisfactory by medical jurists, and as it consumes but little time, is it not as well to make all, or at least the greater part of them? Any common test omitted is often seized by the defendant's counsel, and is made to appear as the most characteristic, if not the only reliable test; why not avoid even this slight perplexity, besides otherwise the jury may be misled; again an accumulation of tests perfectly corresponding with, and corroborating each other, is more satisfactory to them.

In fact, the production of a metallic mirror, easily volatilized and readily oxydizable, and which furnishes by oxydation octahedral crystals soluble in water, is sufficient evidence of arsenic.

Various plans may be adopted to bring the sulphid of arsenic, obtained in the manner just mentioned, into a state fit for making the various tests.

The following method is convenient and simple. A part, or the

whole of the sulphid of arsenic, according to the quantity obtained, is to be placed in a small porcelain dish, and concentrated nitric acid added, and evaporated. This operation is to be repeated a number of times. The residue is to be repeatedly moistened with water, and as often evaporated, by this means every trace of nitric acid is finally removed (a condition essential to the success of the succeeding operations) the sulphid of arsenic is by this treatment converted into arsenic acid. The mass remaining in the dish is dissolved in a small quantity of water, and if particles of sulphur are present, it is to be filtered, the filter thoroughly washed, and the washings mixed with the original solution. The mixed fluid may be divided into two parts, *A* and *B*.

A is to be divided into two parts, which may be used respectively in (1) Marsh's apparatus, and (2) according to Reinsch's method.

B is to be evaporated nearly to dryness, then thoroughly mixed with twice its bulk of carbonate of soda, and gently heated until perfectly dry. It may then be divided into two parts, to be used respectively in (1) Fresenius' and Babo's apparatus, and (2) in the ordinary reduction tubes.

3. *Marsh's Apparatus*.—Mr. Marsh, of Woolwich, in the year 1836, proposed an exceedingly simple and delicate method for the detection of arsenic. The principle upon which it is founded may be briefly stated as follows :

In the presence of nascent hydrogen, arsenious and arsenic acids are deoxydized, water is formed, and the metallic arsenic combines with hydrogen forming arseniuretted hydrogen gas. ($\text{As O}_3 + 6 \text{H} = \text{As H}_3 + 3 \text{HO}$). The simplest form of Marsh's apparatus consists of a bottle closed with a cork containing two perforations, in which are placed a funnel tube and a tube bent at right angles, drawn out to a point at the free end, zinc and water being placed in the bottle, and a little sulphuric acid added, hydrogen will be evolved, if now a solution of arsenious acid be added, arsenetted hydrogen will be formed.

III. *As* is inflammable, burning with a bluish white flame. If a porcelain plate be held in the flame, a brownish stain of metallic

1.—*Def* will be formed upon the porcelain. Berzelius observed

The sol. tube was heated, the gas was decomposed, and that water, placenic was deposited upon its walls. Pfaff and Thompson independently of each other, the discovery that



antimony formed a similar compound with hydrogen, and that it exhibited phenomena similar to those already noticed in the case of arsenetted hydrogen. This last discovery destroyed confidence in Marsh's test, until it was found that the two compounds could readily be distinguished.

Marsh's apparatus as originally proposed was open to numerous objections; improvements have been made, however, by which these have been very completely removed. The apparatus here described, I have used with much advantage, although somewhat more complicated than the form usually employed, it fulfills its objects so perfectly, that the trouble of making it is amply compensated for by its efficiency.

The generating vessel *A*, (plate 1) is a Wolfe's bottle; its three necks are closed by corks, in which are accurately fitted (1) a funnel-tube, (2) a syphon-tube, for drawing off the liquid when in large quantity, without admitting air and long suspending the operation; and (3) a bulbed tube filled with fragments of pumice stone or charcoal moistened with sulphuric acid. A tube *B* bent thrice at right angles, connects the drying bulb with the drying tube *C*; this has in its lower part, immediately above the constriction, a little asbestos or cotton to prevent the mass above from falling down. The lower half of the tube is to be filled with caustic potash in fragments the size of a pea; the upper half is nearly filled with fragments of chlorid of calcium; finally, a little asbestos or cotton is placed above.

The caustic potash serves two purposes—that of drying the gas and removing any acid that may be present, which otherwise might prevent the formation of arsenical spots. Thus, if sulphuric acid was carried over it would liberate chlorohydric acid from the chlorid of calcium; and again, if a chlorohydric solution was to be used in the apparatus (which is not to be recommended), the effect above mentioned might occur; the potash removes all danger of this happening. The chlorid of calcium serves simply to dry the gas. The mouth of the drying-tube is closed with a cork, through which passes a short tube *D*, bent at right angles. The reduction tube *E* ought to be of Bohemian glass—this will not readily fuse, and being free from lead, will not blacken when heated; it is connected with *D* by a small bit of rubber tubing. A convenient sized tube is one of about three-sixteenths of an inch external diameter, and about two-thirds of this diameter within; a section of such a tube is shown in *G*.

It is advisable to draw out the tube at points from two to two and a half inches asunder, and also at the end for a jet as shown in the figure; for a small deposit produced in a constriction may be more distinctly seen than if in another part of the tube. A number of these tubes, thoroughly cleansed and from 12 to 18 inches in length, ought to be previously prepared. The tube may be heated by an ordinary alcohol lamp, more conveniently by a Bunsen's gas-burner, represented as in the figure, enclosed by a sheet-iron case (supported by a perforated cork moving on the stem of the burner), thus preventing the flame flickering by currents of air. *F* is a simple support for the tube *E*.

It is not necessary to give in detail the proper mode of using the apparatus; suffice it to say that zinc and water being placed within the generator, diluted sulphuric acid (one of acid to three of water) previously cooled, is to be added. When the air is driven out the tube may be heated; if after the lapse of an hour or two no stain is produced in the tube the supposed arsenical liquid may be introduced and tested. It is advisable to obtain mirrors at different parts of a number of tubes, and spots upon a number of pieces of porcelain, such as crucible covers; if the arsenic is present in but minute quantity no spots can be obtained on the porcelain. (See Flandin's method of procedure, *Traité de Poisons*, t. i., p. 621.) The delicacy of Marsh's test is very great, thus Storer shows that the 1-3000th of a grain of arsenious acid in more than ten million times its weight of water will give a distinct stain in the reduction tube. (*Am. Acad. Arts and Sciences*, Proc. vol. viii., p. 79.)

We may notice briefly some of the more simple modes of distinguishing between the mirrors and spots produced by arsenic and antimony.

1. *Treatment of the mirrors in the reduction tube.*—*a.* The arsenical mirrors are always produced beyond the heated part, while antimonetted hydrogen being more easily decomposed by heat than is arsenetted hydrogen, produces a mirror before as well as beyond the heated part.

b. Arsenic mirrors are of a lustrous, blackish-brown color, and when thin, are semi-transparent. Antimony mirrors are fused into small silver-white globules, near the heated part of the tube; beyond they are dull and almost black.

c. If a very slow stream of dry sulphydric acid is passed into the tube and the mirror is gently heated, it will, if arsenic, be

converted into the yellow sulphid of arsenic, and if antimony, into the orange or black sulphid of antimony.

d. If dry chlorohydric acid gas be passed into the tube, (treated as above,) when cold, the deposit, if of sulphid of arsenic remains unchanged, if of sulphid of antimony it is converted into chlorid of antimony, and is volatilized. (The spot if unchanged may be dissolved in ammonia and further experimented with.)

2. *Treatment of the spots on porcelain.*—a. Arsenic spots, when moistened with a solution of hypochlorite of soda, immediately disappear; antimony spots are not affected, at least, not until after a long time.

b. An arsenic spot, treated with a drop of yellow sulphid of ammonium, dissolves slowly and imperfectly; an antimony spot rapidly disappears. If, after this treatment, they are allowed to dry, the antimony spot assumes a rich orange tint, the arsenic spot a light lemon color on the borders, with a larger or smaller mass of undissolved metal in the center.

It may be remarked that, not unfrequently, solutions containing organic matter are introduced into Marsh's apparatus; this is extremely improper, for organic matter alone occasionally produces mirrors similar to those obtained by arsenic and antimony, and if these metals are present, the indications are neither so clear nor so satisfactory as when pure solutions are used.

4. *Reinsch's test.*—Hugo Reinsch published in 1843, (Ann. d'Hygiene, 1843, vol. i. p. 439), a simple method of detecting arsenic, it may be stated as follows: The suspected mass, if not liquid, is to be finely divided, placed in a porcelain dish with water, and chlorohydric acid added until distinctly acid. The mixture is then to be boiled until it becomes, as far as possible, homogeneous. It is then to be strained or filtered and boiled again with strips of bright copper foil or gauze. Arsenic, if present, is deposited upon the copper, which becomes blackened. The metallic slips are then carefully washed, dried and heated in a glass tube closed at one end, when arsenious acid sublimes, which may be recognized by its solubility in water and by the liquid tests noted hereafter. (The liquid prepared from the suspected organic matter, in the manner previously mentioned, is admirably fitted for this purpose.) Lippart has shown (Jour. für prak. chem., lxxxi, p. 16,) that the deposit is not pure arsenic as was generally supposed, but a combination of arsenic and

copper, (Cu. 68, As. 32 p. c.), and that by continued heating of this deposit in hydrogen gas it loses only 7 p. c. of arsenic and that then if ignited in air, the greater part of the arsenic remains.

Reinsch's test is readily made, it is not, however, so delicate as Marsh's test. There are a number of objections to it, the most important of which are the following:

1. If the arsenic is in minute quantity, the deposit on copper will not produce arsenious acid in sufficient quantity to make the confirmatory tests.

2. If sulphid of arsenic is present it escapes detection altogether. In this state arsenic often exists in the remains of those poisoned by it who have been dead a considerable time. Arsenic is often contained in the commercial copper, and hence, under certain circumstances, as when free chlorine is present in the liquid examined, a deposit of arsenic would be produced, even if the liquid did not contain it originally.

5. *Fresenius' and Babo's Apparatus.*—Arsenious and arsenic acids, and their corresponding earthy and alkaline salts, when ignited with a mixture of cyanid of potassium and carbonate of soda, yield up all their arsenic in the metallic state. If the tersulphid of arsenic is employed, the greater part of the metal is reduced, the remainder forms a sulpho-salt unacted upon by cyanid of potassium. If an excess of sulphur is present the metal remains in great part or wholly unreduced. If the ignition is made in a glass tube, sealed at one end, a part of the arsenic may be oxydized by the air, and thus, if it be present in small quantity, it may escape detection. To avoid this result, Fresenius and Babo recommend the apparatus. plate 2, in which the reduction takes place, in an atmosphere of carbonic acid.

The flask A (for the evolution of carbonic acid) is partially filled with lumps of marble or compact limestone. It is closed by a cork, containing two perforations, into one of which is fitted the funnel tube a, into the other perforation is a tube b, connecting the two flasks. The flask B contains concentrated sulphuric acid, which dries the gas as it passes through it. The mode of using the apparatus is as follows: The sulphid of arsenic, or preferably the arsenate of soda, prepared from the suspected matter as already mentioned, is pulverized in a warm mortar, with ten parts of a well dried mixture, consisting of three parts of carbonate of soda and one part of cyanid of potassium. The

powdered mass is then placed on a slip of glazed card paper, bent into the shape of a gutter and pushed into the reduction tube down to e. By turning the card, the mixture is deposited between d and e, without soiling other parts of the tube. The card is then withdrawn, and the tube connected with the apparatus (as shown in the figure), supporting its free end if necessary. The tube ought to be of Bohemian glass, and about one-fourth of an inch external diameter. Chlorohydric acid is now added to the flask A, the carbonic acid evolved is dried in B. The reduction tube must now be gently heated throughout its whole length until all moisture is expelled, both from its walls and from the mixture. When this is accomplished, and when (the air having been completely driven out) the bubbles of carbonic acid gas pass through B at the rate of one a second, a lighted lamp may be placed at E, and the mixture heated by another lamp flame. The greater part of the arsenic will condense at the point H, a small portion will escape from the tube, producing a garlic odor in the atmosphere. By carefully heating the tube before and beyond the deposit, it may be collected in a small spot and will have a highly lustrous metallic appearance. If it is to be preserved, the point may be sealed by the blow pipe flame, the other extremity drawn out and sealed in a similar manner. The deposit may, of course, be converted into arsenious acid by oxydation, dissolved in water, and the liquid tests applied.

The advantages of Fresenius' and Babo's test are these :

1. It is simple and easy of execution.
2. It is impossible to confound arsenic with antimony; antimony compounds do not furnish any deposit under these circumstances.
3. It is a delicate test, the $\frac{1}{800}$ part of a grain may be detected by careful manipulation. It is not, however, nearly so delicate nor so readily applied as Marsh's test.

6. *Reduction Test—Liquid Tests.*—a. *The reduction test* now to be considered is the same as the last, except that the arsenic is volatilized in air instead of in carbonic acid. A number of tubes are to be prepared, with a bulb on one extremity. The mixture of the arsenical compound, carbonate of soda and cyanid of potassium, is to be introduced into the bulb of the tube by means of a paper gutter, as already mentioned, not more than half filling it. The bulb is first to be gently warmed, (and if moisture escapes it should be removed with a twisted slip of

paper,) afterwards it is to be heated till the mass fuses, and finally more intensely, by this means an arsenic mirror is obtained of great purity and beauty.

b. Odor test.—If the tube be cut off just below the mirror, and if then it is held inclining upwards in the flame of an alcohol lamp, the flame will be tinged bluish white, and the characteristic garlic odor may be perceived.

c. Guy's method of reduction.—As it is often difficult to distinguish the octahedral form of the arsenious acid crystals, or critically to examine the deposits, when the quantity is small and contained in a tube, Guy proposes the following method :

A tube is employed three-fourths of an inch in length, and of rather larger diameter than is commonly employed. This tube is supported in a vertical position, by being dropped into a hole punched in a slip of copper foil. The arsenical mixture is then dropped into the tube, and heat carefully applied to the closed end, at the same time a clean microscopic glass cover or a glass slide is placed over the open end of the tube; crystals of arsenious acid are thus produced which may readily be examined by the microscope. When metallic arsenic is sublimed, the crust is found to consist of a multitude of globular particles, or if partially oxidized, of octahedral crystals mixed with the globules. The delicacy of this test is such, that with the 1-1000th of a grain of arsenic, thousands of distinct octahedral crystals of arsenious acid may be obtained. (Archives of Medicine, No. 3, p. 25.)

d. Oxydation test.—If the closed end of the tube be cut off and the mirror is carefully and gradually heated, the arsenic will volatilize, and oxydizing becomes converted into arsenious acid, which will condense in the cooler part of the tube in a mass of minute octahedral crystals.

e. Solution.—If that part of the tube containing the crystalline deposit be heated in a test tube with water, the deposit will dissolve; with this solution, the liquid tests may be made as follows :

Liquid tests.—*a.* If to the solution a few drops of nitrate of silver are added, and then very dilute ammonia, drop by drop, the characteristic yellow precipitate of arsenite of silver will be produced.

b. Treated with solution of sulphate of copper and ammonia added as above, a grass green precipitate of arsenite of copper will be produced.

c. Treated with chlorohydric acid, and then strong sulphydric

TOXICAL EXAMINATION OF ALLEN BAKER.

DIED JULY 5th 1850.

AGED 59 YEARS.

Examination commenced Jan 1st 1851
concluded March 1852.

A
BRAIN



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus

B
THORAX

B



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus



Sulphuret of Arsenic



Assayed by Marsh's
Apparatus

C
ABDOMEN

C



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus

D
MUSCULAR
TISSUE

D



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus

E
BONES

E



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus



Assayed by Marsh's
Apparatus

CHARLES S. H. PORTER, M.D.

Albany Medical College

acid water be added, a precipitate of the yellow sulphid of arsenic is produced, soluble in ammonia.

d. If a small mass of the crystals (see *d*) be boiled with nitric acid, arsenic acid is produced, which gives, with nitrate of silver and ammonia added as above, a reddish brown precipitate of arsenate of silver.

It is evident that the various tests given in this section may be made from the deposits produced in Marsh's and Fresenius' and Babo's apparatus.

Which and how many of the tests enumerated are to be made, must depend upon the quantity of arsenic found. In most cases, as has been said if discovered, there is sufficient present, with careful manipulation to make them all.

7. Preservation of the tests.—It is considered of importance by medical jurists that specimens of the poison obtained in the course of the examination of a medico-legal case be preserved, that they may be shown to the court if a trial occurs. In certain cases, as in those where metallic poisons have been discovered, this may readily be done. I have been in the habit for a considerable time, in such cases, especially where arsenic has been found to be the toxical agent, to attach the slips of porcelain and the glass tubes containing the various tests, to a sheet of card-board, and inserting this in a frame (protected by a plate of glass) as is shown in Plate 3.

In the upper part is mentioned the name of the party submitted to toxical examination; immediately below the age and date of death, and the date of the commencement and completion of the examination; below these, in the centre, are placed the specimens; upon the right, opposite each, are stated the nature of the substances exhibited; upon the left are the names of the parts or of the materials found to contain the poison, indicating by letters the specimens obtained from each.

By this arrangement the various results are placed in a secure and permanent form which may readily be inspected. The collection itself gives at a glance an epitome of the chemical examination.

As regards the mode of preserving the specimens, it may simply be said that the tubes containing the mirrors from Marsh's and Fresenius & Babo's apparatus are drawn out to a point at either end and sealed by a blow-pipe, the deposits being in the centre, the same with the other solid tests. The liquid tests

may be formed in tubes of the proper form by the successive introduction of the proper reagents, or they may be placed there after being formed in another vessel by simply heating such a tube and immediately immersing its open end into the liquid containing the precipitate, leaving it there till it cools; a portion of the precipitate and liquid will rise in it, when the open end is to be sealed. The tubes are then to be attached by wires or cord to the card-board, and the proper names attached as already mentioned.

PART II. CASES OF ARSENICAL POISONING.

CASE No. 1.

Albert Anderson was tried at Norwich, Chenango county, September, 1859, for administering poison to William Brooks, with intent to kill.

1. *Symptoms and circumstances.*

It would appear, from the evidence, that Brooks, a farmer, had had some slight difficulty with Anderson, his hired man, some few days previous to the alleged poisoning. When taking their supper one evening, Mrs. Brooks observed on pouring out the tea that it appeared as if a little flour was strewn over it; attention was called to it, but the family finally concluded that there was nothing wrong about it.

Brooks, after eating a small quantity of food, took a swallow of tea, and remarked that "it bit his throat badly;" he then took a mouthful of food, and still suspecting nothing, again drank a portion of tea; he immediately became sick and said, that he was poisoned. The symptoms subsequently observed were those commonly produced in cases of arsenical poisoning; thus he experienced almost continual retching and vomiting, there was profuse diarrhea and a terrible burning pain in his throat and stomach. In a short time there was great prostration, his pulse was small and feeble, respiration difficult, the extremities cold and his face expressive of great anxiety. After the vomiting, which continued an hour or more, the above symptoms diminished in intensity, but it was not until after months had elapsed that he fully recovered his health.

2. *Chemical examination.*

The tea leaves handed me for analysis, upon being examined with a lens, were found to be covered with innumerable crystals, many of which were observed to be of an octahedral form, these,

submitted to analysis, were found to consist of arsenious acid. Thirty grains of the tea leaves yielded 0.59 grains of arsenic. A number of the leaves covered with the white crystalline deposit, together with specimens of the metallic arsenic and its various compounds, produced in the examination were carefully preserved for exhibition in court.

3. *Resumé.*

This case is interesting from the short period which elapsed between the imbibition of the poison and its first effects. It would appear from the testimony that it could not have been more than two or three minutes from the time B. drank the tea till vomiting and pain occurred. The tea probably contained a very considerable quantity of arsenic in solution, at least as large a quantity as the hot water (which had been boiling) containing such organic matter could dissolve, and hence, its effects would be more likely to be produced quickly than if taken only in the solid state. Mr. Brooks on first drinking the tea remarked that "it bit his throat badly;" this circumstance seems to me worthy of note, as another illustration of the fact that in certain cases, especially when the arsenic is in solution, an unusual or peculiar taste is perceived, thus it has been variously described by different persons as having a hot, a rough or an acrid taste, while, ordinarily, those poisoned by it perceive no peculiarity in the food or other article in which it is given.

It may be mentioned here that the attending physician (Dr. S. C. Gibson), on first reaching the house, appreciating the nature of the case, at once secured and retained in his possession, till given to me for analysis, the tea leaves, the supposed cause of the sickness, thus preventing any difficulty from arising in the investigation of the affair, so far as the poisonous material was concerned. Allusion is made to the above fact, because in the great majority of cases so little attention is paid to this point, that the poisoned article is carelessly or designedly removed or destroyed, or is so treated that its identity cannot afterwards be established, thus preventing or embarrassing the judicial investigation of the case.

When on the stand as a witness, I produced the various specimens of arsenic and its compounds, obtained in my analysis, but in this as in certain other cases in which I have been engaged, the defendant's counsel objected to their being shown to the jury,

on the ground that they were incompetent to judge of their value; the court sustained the objection, and the specimens were not exhibited.

CASE No. 2.

The People of the State of New York vs. Charles D. Swan.—Charles D. Swan was indicted by the Grand Jury of Erie county in December, 1858, for administering poison, with intent to kill Nancy Swan. The above case was tried at the Erie Oyer and Terminer, July, 1859, Judge Clinton presiding.

Although I had no personal connection with this case until a late period, and then only remotely, yet as it presents some points of peculiar interest, and has not so far as I can learn, been published, I am induced to present a brief synopsis of it here.

1. *Symptoms and circumstances.*

It would appear from the testimony, that the accused was not happy in his family relations: thus, he was not on good terms with his mother-in-law, Jane Harrington (the principal witness for the prosecution), and his wife (the Nancy Swan mentioned in the indictment), made preparations for an application for divorce some few months after their marriage. She, it may be stated, was affected with phthisis, and had been in a hopeless condition for some months previous to her death. Mrs. Harrington testifies that on the 22d of September, Swan came home earlier than usual, and pulled out four apples, saying, "here are some sweet apples; she (his wife) has been teasing me for them; to be sure that they are sweet, I have run a knife in and tasted them." They were hard green skinned apples, the incisions extended from the stem to the blow, apparently half way to the core. Swan left that same evening and was not seen by the witness until after his wife's death, (which occurred from pulmonary consumption, December 31st, 1858, about a year after their marriage.) The apples were laid away in a drawer until the 11th of October. On Monday, October 11th, Mrs. Swan being in better health than usual, enquired for the apples; they were then mealy; her mother gave her one; she admired it, and ate a part of it; the remainder, about one-third, being eaten by the witness, who says there was nothing peculiar in its taste. The other apples, three in number, were placed in a dish and baked in the oven. Soon after eating the apple, Mrs. Harrington says she experienced nausea and a painful burning in her throat; her daughter com-

plained of these symptoms and of thirst. Both drank of mustard and water and vomited freely. At night their lips, mouths and faces were much swollen. The witness says her head swelled up to the size of a half bushel, her eyes were completely closed, and her tongue and throat in such a condition that she could not speak intelligibly; for three or four days she said she was helpless, and it was about a fortnight before she could attend to her business.

Dr. W. Bartlett testified that he saw Mrs. Harrington the day after the apples were said to have been eaten, and Mrs. Swan the next day after; the latter complained of a burning pain in her stomach and an excruciating pain in her throat (her throat was ulcerated before), she could not articulate well, and complained that she could not swallow. The former complained of pain in the stomach, she also complained of her lips and tongue; they were swollen and continued to swell; on the seventh day she could not see for a day and a night.

2. Physical and Chemical Examination.

Mrs. Harrington testified that after the apples were baked, her son and herself examined them; two were found to have incisions in them, in which was something that looked like white flour. In one of the apples there was about as much white powder as would cover, not heaping, a three cent piece; in the other not so much. Suspecting the presence of poison, Mrs. Harrington caused them to be analyzed. Prof. James Hadley testified that in each of the two baked apples received by him there was a slit extending from the stem to the apex, and from the surface pretty near to the core. Both apples were opened; there seemed to be a white powder on the cut surface of both. The apples were placed in Prof. Geo. Hadley's hands, who testified that there was at least one grain of white arsenic on the cut surface of one apple.

Dr. J. F. Miner, sworn for the defence, testified that he inserted arsenic into two apples, in one before, in the other after baking; in the first about fifteen grains, in the second about ten grains. The arsenic put into the apple before baking was much more absorbed than that in the other apple, and again, the juice during the baking had saturated and discolored the arsenic, while that put into the apple after baking was but little absorbed and retained its white, fresh appearance.

Evidence tending to impeach the character of Mrs. Harrington was then presented, and afterwards rebutting testimony introduced.

The prisoner was convicted, and sentenced to be imprisoned, at hard labor, in the State Prison, at Auburn, for the term of twenty years.

3. *Application for Pardon, &c.*

Governor Morgan, in accordance with his usual custom, visited the State Prison, at Auburn, in Sept., 1860, and there granted an interview to those who wished for a pardon, and among others to Swan. The statement made by Swan consisted in a general denial of the truth of that testimony upon which his conviction was obtained, and an assertion of his entire innocence of the crime for which he was suffering punishment. He claimed his release, not as an act of mercy, but simply as an act of justice. Statements were subsequently received by the Governor from the presiding judge at the trial, the prosecuting attorney and other responsible parties, all of whom were satisfied of the innocence of Swan, from certain experiments made by Prof. George Hadley on

4. *The Effect of Arsenic on Apples,*

A brief abstract of which is given below. Notice must be taken here of an affidavit made by Mr. B. S. Brown, in which he states that on the third of March, 1860, he made incisions in two apples, one sweet and the other sour, and placed in each gash a little arsenic. Twenty-one days after, March twenty-fourth, the apples were examined, and their cut surface were found to have decayed, parted, and shrunk away from each other, at least one-eighth of an inch; the skin on each side of the incisions was found withered, wrinkled and drawn in towards the core.

Prof. Hadley's affidavit stated that, from the 27th of July till the 18th of August, 1860, he conducted a series of experiments to ascertain the effects of arsenic upon apples, so far as these effects might have an important bearing on the testimony of witnesses in the above mentioned trial. After alluding to the slight changes which take place in apples in which deep gashes have been made, even after the lapse of a week or two, he says:

"When, however, a grain or two of arsenic (arsenious acid or common white arsenic,) is inserted in the cut, the cut begins to open and, in the course of a few (two to five) days, the edges are

separated from one-eighth to one-fourth of an inch, or even more, showing very plainly the white arsenic within. At the same time the skin adjacent to the cut, begins to be discolored, and, together with the pulp beneath, turns dark brown, both in appearance and consistency, resembling the ordinary decay of the apple. This change begins to show itself on the second or third day, and then makes steady and regular progress, extending on each side of the cut so rapidly, that by the eighth day it attained the width of from five-eighths to seven-eighths of an inch; by the sixteenth, of one and a half to two inches, and by the twentieth or twenty-first day from one-third to one-half or more of the apple (according to its size,) will be affected with decay."

The experiments which gave the above results were conducted with great care upon a great variety of apples, and the results were singularly uniform.

Upon the application for the pardon of Swan being made, Governor Morgan placed the various papers in my possession, and requested me to make such experiments as would tend to elucidate the matter, and report to him my results, and my opinion of the case.

I took apples of various kinds and qualities, and made three similar incisions in each; in one arsenic was placed, in another a little sand, the third was left free. This proceeding was adopted that the effect of an inert foreign body (sand) in the incision might be compared with that containing arsenic, and the empty one. The changes observed during three weeks corroborated in great part those mentioned above. Experiments of a like character were also made upon other fruits, the results were generally similar and need not here be detailed.

From a perusal of the testimony and the results of my experiments, I was convinced that it was impossible that Swan was guilty of the crime of which he was convicted, and so reported.

Gov. Morgan subsequently pardoned the prisoner as an act of simple justice, being entirely satisfied of his innocence.

5. *Résumé.*

In this case it will be remembered that the apples were said to have been given to Mrs. Harrington on the 22d of September, and were then placed in a bureau drawer till the 11th of October—a period of 19 days; and as Swan was absent during that time, the charge could only be sustained upon the theory that he

had inserted arsenic in the apples on the 22d of September. It is to be noticed that when Mrs. Harrington gave her daughter one of the apples (it containing an incision), the latter it is stated admired it as if it was particularly perfect; whereas experiment proves that if arsenic had been inserted at the time supposed (19 days previously), such a change would have taken place in the apple that it could hardly have been handled, much less eaten, without its peculiar condition attracting particular notice and observation.

Again, it was stated that the arsenic contained in the baked apple was *white*; the experiment of Dr. Miner shows that if it had been inserted *before* baking, the juices would have discolored it. These considerations, it seems to us, abundantly prove that Swan could not have been guilty of the crime of which he was convicted.

The peculiar effect of arsenic on pulpy fruits, as shown in the above experiments, has not, so far as I can learn, been hitherto noticed; and it seems to me an interesting, and in this case at least, a highly important fact.

CASE No. 3.

Mary Hartung was tried at Albany, Albany county, January, 1859, for the murder of her husband, Emil Hartung, by poisoning him with arsenic.

1. *Symptoms.*

Emil Hartung, the deceased, was the keeper of a drinking saloon in Albany. In the early part of April, 1858, he was attacked with acute inflammation of the larynx. His attending physician was Dr. Joseph Levi, from whose testimony we gather the following description of his illness and death.

April 11. He complained of pain in the throat, coughed much, and exhibited febrile symptoms. Dr. Levi diagnosed the case as acute laryngitis, and prescribed tartar emetic, $\frac{1}{8}$ grain, every second hour, sinapism to the throat, and demulcent draughts, recommending him to lie in bed.

April 12. Patient rather more comfortable. Pain in the throat, and cough continued. The tartar emetic was ordered to be taken in smaller doses, and a blister applied to the throat.

April 13. In addition to former symptoms patient labored under great oppression of the chest and dyspnoea. Then the tartar

emetic was discontinued, and he was bled and put on a prescription of nitrate of potash and muriate of ammonia dissolved in mucilage. In the evening he was much relieved, and from this time continued gradually improving for a week.

April 20. In the morning he complained of constipation, and accordingly two "light cathartic pills" were administered. At ten o'clock in the evening Dr. Levi called and found that Hartung had undergone a remarkable change. His face wore "the hipocratic expression," he was tossing restlessly about the bed, laboring for breath; his pulse was quick, small, and irregular, his extremities cold and skin of a livid hue. He had purged and vomited violently since morning and complained of an intolerable burning sensation and pain in his chest. At 3 o'clock in the morning of April 21st, he was speechless and at 8 o'clock expired.

It should here be mentioned that during his entire illness he manifested great aversion to the food furnished him by his wife, every article being rejected after he had tasted it, on account, as he said, of its peculiar taste.

It should also be mentioned that all matters evacuated by vomiting and purging were thrown away, so that Dr. Levi had no opportunity of seeing them although he enquired for them. During the course of the illness Dr. Levi had no suspicion that the symptoms were other than natural, until the day before death, when he was struck so forcibly with the mortal change which had occurred that he made earnest inquiries as to what his patient had taken to produce such results.

2. *Post mortem examination.*

The body was exhumed and an autopsy made by Dr. Jacob Rheinhart, on the twenty-first of May, one month after death. He stated that the stomach and œsophagus showed traces of inflammation sufficient to account for death.

The trachea, lungs, liver, spleen, stomach and intestines were reserved for chemical examination.

3. *Chemical examination.*

On the twenty-first of May the above mentioned organs were delivered to me for analysis. They had not previously been laid open or cut into.

On a physical examination the mucous coat of the œsophagus was found to be thickened, easily detached and readily torn. The

stomach showed marks of violent inflammation. Its mucous membrane was of a dull red color, which became brighter by exposure to the air. It was much thickened, especially along its greater curvature, and was soft and easily separated from the muscular coat. Beneath the mucous layer were patches of a dark color, apparently arising from extravasated blood. The duodenum also showed marks of inflammation and its mucous coat was ulcerated and detached in different places.

Upon the external and internal surfaces of the stomach, and upon the exterior of the liver and spleen there were patches of a gamboge-yellow color, of various sizes, ranging from one-sixteenth of an inch, to more than one inch in diameter. These spots were particularly abundant upon the mucous surface of the stomach, and upon the liver. On treating this yellow matter with solution of ammonia, the color disappeared, showing it to be sulphid of arsenic, produced by the action of the sulphydric acid, generated during decomposition of the body, upon the arsenious acid present.

By pursuing the general method of analysis already described, arsenic was found both in the stomach and liver. Two-thirds of the stomach yielded six grains of arsenic, the remaining third having been reserved for examination in case any accident might happen to the larger portion operated upon. All the usual tests were made, and the various combinations of arsenic thus obtained preserved for exhibition at the trial of the accused.

4. *Resumé.*

In regard to the inflammation of the stomach and oesophagus observed at the post mortem examination, Dr. Reinhart, who conducted the examination, made the following statement at the coroner's inquest.

"The irritating matters of which the deceased died, must have been taken into the stomach *two months* before death." At the trial of Mrs. Hartung he persisted in this opinion, observing further:

"It might be that the death was accelerated by something else; the appearances which I observed could not be produced by arsenic administered within three days of the time of death; the appearances were sufficient in themselves to produce death."

In answer to this broad assertion, we may observe that while the inflammation of the throat in this case may have been pro-

duced by some other agency than arsenic, yet, inflammation of that organ has been observed in the case of a person who died in twenty hours after arsenic had been taken, and moreover that inflammation of the stomach has been found in cases of arsenical poisoning where the patients survived only two, three and a half and five hours.

In this case Mr. Hartung probably did not survive more than eighteen or twenty hours after the arsenic was administered to him, for the description of his illness given by Dr. Levi points out very strikingly the time when the character of the disease changed from relief and comparative comfort to the horrible agony and well marked symptoms of arsenical poisoning, viz: between the morning and evening of the day preceding his death.

In relation to the earlier part of Hartung's illness, the following facts are worthy of attention:

At the trial, Louis Sautter, an apothecary, testified that six weeks before Hartung died, Mrs. Hartung purchased at his store a small jar of phosphorus paste, stating that she wished to use it to destroy vermin.

Mary Foell, another witness, testified that three or four weeks before Hartung's death, she saw Mrs. Hartung go to this jar, remove some of its contents with her fingers, throw it into the food which she was preparing for deceased, and afterwards wipe her fingers on a towel; that this towel acquired thereby a peculiarly offensive smell; that the "tea, coffee, beer—soup and everything which was cooked" were similarly contaminated; that she (witness) "tasted the soup and had to vomit terribly;" that she often saw Mrs. Hartung use the contents of this jar during eight days or two weeks before Hartung was confined to his bed.

In view of this testimony, we are at liberty to infer that this material (phosphorus) may have been the exciting cause of the illness under which deceased lingered until the dose of arsenic which terminated his life was administered. On this supposition we have no difficulty in accounting for those marks of chronic inflammation which Dr. Reinhart thought he recognized, and which he was unwilling to attribute to the effects of arsenic administered so shortly before death.

However this may be, it is hardly proper to claim that one, merely by a physical examination of the exterior of an organ and the indications of inflammation observed, can with any degree of certainty determine the time when such inflammation was

produced. On the contrary, it is necessary, in order to entertain any correct opinion on this point, to know both the condition of the subject's system, and the nature and quantity of the poison taken.

In regard to the ulcerated patches in the duodenum, it is to be remarked that ulceration is but rarely observed as an effect of arsenic: it has been found, however, in the stomach of a person who survived the effects of the poison but ten hours. It may be observed here that ulceration has been noticed as an effect of poisoning by phosphorus.

The gamboge-yellow spots observed on the walls of the stomach, and upon the exterior of the liver, are not unfrequently met with in deaths from arsenic where the body has been buried some time, (in this case, thirty-one days.) It is a most characteristic appearance, and is not likely to be mistaken for any other substance. The application of ammonia to the yellow matter, when the tissue is broken up, will at once remove any doubts, by dissolving it if it be sulphid of arsenic.

Of these spots Christison well says: "It is the effect of a chemical test applied to the poison by Nature."

CASE No. 4.

Sarah Harrington was tried at Delhi, Delaware county, in March, 1861, for the murder of her husband, James Harrington, by poisoning him with arsenic.

1. *Symptoms and circumstances.*

James Harrington, a laboring man, residing in Clovesville, Delaware county, being taken ill in May, 1860, was attended by Dr. O. M. Allaban, from whose testimony at the trial we condense the following record of his fatal illness:

May 6. Patient complained of severe pain in his head and sore throat. His eyes were red, his countenance flushed, his pulse was strong and rapid, and he was expectorating a stringy mucus. The case was diagnosed as Pneumonia; his throat was cauterized and a blister applied to his chest; Dover's powder and calomel and jalap were administered, and an antimonial expectorant mixture prescribed.

May 10. Patient complained of pain in the head and severe cough; pulse strong and "high;" in other respects better than before. A blue pill was prescribed to be taken at night and in the morning and followed by castor oil.

May 13. Less pain in the head and less suffering in general.

May 15. Febrile pulse; patient was bled.

May 18. Patient generally better; antimonial preparation discontinued and an emulsion of oil of turpentine and gum prescribed.

May 19. Patient worse; had vomited much during the night; had great thirst and pain and burning sensation in the stomach; rapid and strong pulse. Discontinued the turpentine emulsion, and gave soda and morphine, also ipecac as an expectorant.

May 21. Had been delirious during the night; lungs relieved; action of heart laborious with a peculiar tinkling sound; pulse rapid and strong; patient suffering from thirst, nausea and vomiting. A blister was applied to the back of the neck, and careful directions given about diet.

May 22. Patient much worse; face flushed and swollen, pulse rapid and feeble, delirium, fever, numbness of limbs, and burning pain in the stomach; previous symptoms all aggravated.

May 23. Extremities cold, profuse perspiration, pulse imperceptible, pupils much dilated; delirious muttering. Death ensued in half an hour.

2. *Post-mortem examination.*

On the sixth of June, 1860, fourteen days after death, an autopsy was made by Drs. Allaban, Street, Crawford and Ford.

External Appearances.

Externally the body appeared blackened, swollen, and considerably decomposed.

Abdomen.—The abdomen being opened, the stomach appeared distended with gas. Its external surface presented traces of inflammation, its blood-vessels being enlarged. The stomach contained from one-half pint to a pint of dark colored fluid. Its mucous coat was of a dark red color, and was thickened and easily detached by the finger.

The upper portions of the small intestines also presented marks of inflammation; the large intestines, the liver, kidneys, and other abdominal viscera were in a healthy condition. The lower portions of the lungs were dark colored, and the mucous surfaces of the bronchial tubes inflamed. The brain was not examined.

The stomach and its contents, and portions of the small intestines were placed in jars and reserved for chemical analysis.

Subsequently the remains were re-exhumed, and the tongue, kidneys, liver, spleen, œsophagus, and portions of the muscular tissue also removed, placed in jars, and delivered to me for chemical examination.

3. *Chemical Examination.*

As usual, before proceeding to the analysis, a careful physical examination was made of the various organs. The interior surface of the stomach presented marks of great inflammation, the principal indications being the engorgement of its vessels, the deep redness of its color, the thickening of the mucous coat, its loss of consistence, and the readiness with which it could be detached from the walls of the stomach. The duodenum also exhibited traces of inflammation, but the remaining viscera appeared natural.

The tissues of the different organs having been decomposed by hydrochloric acid and chlorate of potash as above, the resulting solutions were systematically tested for various poisons, and arsenic and mercury detected. The amounts found in the several organs were as follows :

The tongue contained .034 grains of arsenic.

The substance of the stomach contained 2.142 grains of arsenic, and .872 grains of mercury.

The contents of the stomach contained .452 grains of arsenic.

The small intestines contained 1.402 grains of arsenic, and a *trace* of mercury.

The large intestines contained 1.004 grains of arsenic.

The liver (the surface having been pared away) contained .351 grains of arsenic.

The kidneys and the muscular tissue each contained a *trace* of arsenic.

The entire amount of arsenic, which was collected from the remains and weighed, was 5.385 grains ; the entire amount of mercury collected and weighed was .872 grains.

Resumé.

The mercury found in the tissue of the stomach and small intestines originated, without doubt, in the "blue pills" ordered by Dr. Allaban. It cannot be considered strange that no larger quantity was found in the remains ; because, in the first place we have no means of knowing how many pills were administered ; and secondly, it is most probable that the larger portion of the

mercury contained in them was carried out of the system by the excretions, the patient having lived twelve days from the time when they were ordered. On the contrary, it could not have been considered remarkable, even if no traces whatever of mercury had been detected.

The same principle holds good in regard to the *antimony* prescribed by Dr. Allaban on the first day of Harrington's illness, *i. e.*, seventeen days previous to his death. It was an *expectorant*, and therefore ordered to be given in very small doses; moreover, we have no evidence that much or even *any* of it was taken. But on the supposition that it *was* taken, its ready solubility, its undoubted excretion by the fæces and urine, together with the frequent emesis by which it may have been rejected almost as soon as it was swallowed, all conspired to render its detention in the tissues, and consequently its detection after death, exceedingly doubtful.

There is one feature in this case deserving of mention, both from its rarity, and as introducing a question which has not, until comparatively lately, received much attention.

During the trial, it was urged by the defendant, through her counsel, that the deceased had, for a long time before his death, indulged in the habit of arsenic-eating. It was clearly established by testimony that he had, for years, used arsenic as a medicine for horses, by mixing it with their fodder, and, on one occasion, thus caused the death of two horses, and severe illness of three others.

Two witnesses testified that deceased had arsenic commonly in his possession.

Two witnesses testified to having heard deceased say that he frequently took arsenic himself.

One witness testified to having seen him touch his tongue to a white powder which he called arsenic; another to having seen him take up arsenic on the blade of a knife and swallow it; another, to having seen him swallow a portion "as large as a kernel of corn," after mixing it with oil; a fourth testified that he saw deceased swallow half a teaspoonful mixed with oil, and that it produced vomiting in about twenty minutes.

From the testimony, we must conclude that the deceased occasionally tampered with arsenic, taking it internally in greater or less quantity. The particular occasions to which the witnesses testified where he took arsenic, occurred a number of years previous to his death. Even assuming, and it is a mere assumption,

unsupported by the least proof, that he was in the habit of eating arsenic, the case is still to be regarded as one of a criminal character, for it is to be noticed that the symptoms of arsenical poisoning occurred at a time when the deceased was prostrated by disease, and unable to help himself. Again, arsenic was found on his tongue and in the contents of his stomach, thus showing that in all probability arsenic had been taken a short time previous to his death.

CASE No. 5.

Mrs. Mary Rosa was tried at Syracuse, Onondaga county, Feb. 17, 1858, for the murder of her husband, Herman Rosa, by poisoning him with arsenic.

1. *Symptoms and circumstances.*

Mr. Rosa was a farmer living in Skaneateles, N. Y. His relations with his wife were represented variously during the trial, the witnesses for the prosecution testifying to her using indecent and profane language, and swearing at and striking and kicking him on many occasions. On Thursday, May 7, 1857, Mr. Rosa drank some tea prepared for him by his wife, and in about twenty minutes afterwards was seized with violent vomiting and muscular spasms. The vomiting continued at intervals during the night, and in the morning Dr. Strong, a practitioner of homœopathy, was called in to attend him. For the details of Mr. Rosa's illness and death we are dependent upon Dr. Strong's testimony as given at the trial, and which we condense into the following record.

Friday, May 8. Patient complained of pain in the eyes, headache, great thirst, muscular spasms, pain in the back, coldness of the extremities, sour and burning eructations and dryness, smarting and constriction of the throat. His pulse was 80 and feeble, his eyes congested and watery, throat red and dry, and tongue coated with a yellowish white fur. There were two or three evacuations of the bowels, preceded by colic pains and accompanied by a burning sensation in the bowels. There was no tenderness of the abdomen upon pressure. The treatment consisted in the administration of homœopathic preparations of ipecac and veratrum.

Saturday, May 9. Pulse 85, skin hot and dry, burning thirst; all the previous symptoms aggravated. Homœopathic doses of arsenicum and veratrum given.

Sunday, May 10. Tongue more heavily coated, skin cool, pulse 85 and feeble; hiccough, thirst, burning pain in the throat and stomach, bilious vomiting, and purging at intervals.

Monday, May 11. Much exhaustion; thirst and burning pain continued. After administering a few more homœopathic preparations, Dr. Strong gave three or four grains of *calomel*, and repeated the dose twice at intervals of an hour, following it by oil. Soon afterwards vomiting and purging began anew with the burning sensation, but with less pain in the bowels. Dr. Strong now desired counsel.

Tuesday, May 12. Drs. De Voe and Baker called in consultation, and found the patient rapidly sinking. His skin was cool and of a livid color. Brandy and quinine were administered, but he soon became unconscious, and at two o'clock expired.

2. *Post Mortem Examination.*

On the fourth of June, 1867, thirteen days after death, autopsy was held by Doctors Fuller, Porter and Benedict.

External appearances.

The surface of the body was of a livid hue, excepting over the region of the stomach, where the color was unchanged. Nothing else was seen worthy of remark.

Head.—The skull was opened, and the brain and its membranes found perfectly normal.

Thorax.—The lungs and heart were normal in position and appearance.

Abdomen.—The stomach and intestines were distended with gas, and exhibited some slight marks of inflammation exteriorly. On opening the stomach, its internal surface was found to be of a dull red color, which became brighter by exposure to the atmosphere. There were also several purplish red spots scattered over its internal coat. On its lower side there was a *yellow* coating covering a space as large as the palm of one's hand. The intestines were also opened, and found to be unusually red on their interior surface.

The œsophagus was opened and a pasty substance removed from it and preserved, together with the stomach, œsophagus, intestines, and a portion of the liver.

On the 28th of January, 1858, the remains were re-exhumed, and the remaining portion of the liver removed.

3. *Chemical Examination.*

The stomach and its contents, and portions of the liver, œsophagus and intestines, were given to a Doctor James Fuller for chemical examination. He professed to be a chemist, and stated at the trial that he had taken portions of the contents of the œsophagus and stomach, placed them in test tubes, and applied to one ammonia-nitrate of silver, and to the other ammonia-sulphate of copper. After boiling the liquids, one exhibited a yellow, and the other a green color, upon which he assumed the presence of arsenic. He made no attempt to analyze the substance of any of the organs, but boiled some of the fluid contained in the jar with the liver, with hydrochloric acid and metallic copper. The latter became coated, after boiling three minutes, with a black deposit, which he assumed to be metallic arsenic. The precipitate from the liquid test above mentioned, he reduced, as he said, to metallic arsenic, converted this into *arsenic* acid, and then reprecipitated with ammonia-nitrate of silver. No further description of his processes is furnished us.

Another analysis was made by Dr. William Manlius Smith, physician and chemist, of portions of the large and small intestines, the liver and œsophagus. He testifies that he decomposed the organic matter by hydrochloric acid and chlorate of potash, and found arsenic in all the remains examined by him. From fourteen Troy ounces of the liver, after it had been cleansed from extraneous matters by washing, he obtained two and one-third grains of arsenious acid, which was weighed in that form. The details of the various processes employed by him are now inaccessible. The results of his tests were exhibited to the court during the trial.

4. *Resumé.*

A brief examination of the symptoms recorded in the beginning of this case, is sufficient to establish their identity with the effects of an irritant poison like arsenic; and we can have little hesitancy in ascribing Mr. Rosa's death to poison. As regards the nature of the poison administered, there can be no doubt that arsenic was demonstrated to exist in the remains in considerable quantity. The yellow patch, as large as the palm of one's hand, found in the stomach, (undoubtedly the sulphuret of arsenic,) furnished valid grounds, by itself, for assuming the presence of

arsenic. and the analysis made by Dr. Smith supplied the confirmation. In the absence of anything like an extended detail of the processes he employed, we cannot of course either deny or endorse its accuracy, but it is most probable that it was correctly performed. One thing, however, in this analysis is worthy of remark, viz.: the product obtained from the examination of the liver, fourteen Troy ounces of which furnished, according to Dr. Smith, *two and one-third grains* of arsenious acid. Assuming the portion examined to have been an average specimen, the whole liver, weighing probably about four pounds Troy, contained *eight grains*, which is undoubtedly a very large amount to be found deposited in that viscus. Dr. Geoghegan, of Dublin, it may be remarked, in his experiments, never found more than two grains in the whole organ.

With regard to the so-called analysis made by Dr. Fuller, however satisfactory it may have been to his own mind, it cannot be regarded in any other light than as utterly worthless and unreliable, especially in a criminal case involving the life of the accused. From his own testimony at the trial, its deficiencies are glaring, and it is very proper that some of them should be pointed out in a paper like this, which has for its object the description of an accurate method.

1. The materials employed by Dr. Fuller, such as the metallic copper, and the hydrochloric acid and other liquids, may have contained arsenic; we have no assurance of their purity.

2. There was no attempt made, whatever, to destroy or remove the organic matter present; on the contrary, the tests were applied directly to the contents of the stomach and œsophagus. It is scarcely necessary to repeat here what has already been stated concerning the errors sure to occur in such an operation.

3. He admitted that he could not distinguish between the precipitate of sulphid of arsenic and those of the sulphids of other metals having a similar appearance, viz.: tin, antimony and cadmium, to say nothing of its admixture with sulphur and organic matter.

4. He stated that he converted metallic arsenic into *arsenic acid* by heating it in a glass tube, and that this product gave a brick-red precipitate with ammonio-nitrate of silver, whereas such a treatment of metallic arsenic would result in the formation of *arsenious acid* which would produce a *yellow* and *not* a brick-red precipitate with ammonio-nitrate of silver.

5. When called upon in court, he was unable to exhibit any of the results of his experiments; this fact alone casts a certain amount of doubt upon his accuracy.

In reviewing this case there is one more point which is sufficiently interesting to be briefly mentioned.

It was proven during the trial, and admitted by the defendant, that she purchased a small quantity of arsenic three days before the death of her husband. This arsenic, she claims, was thrown into a stove and destroyed. Upon this statement I was summoned by defendant's counsel to ascertain whether this could have been the case. Accordingly, I went to the house and removed the soot from the stove pipe for analysis.

After destroying the organic matter present, the remaining solution was found to contain arsenic, which had probably been deposited in the pipe by sublimation from the body of the stove.

How much or how little bearing this fact, showing that some arsenic had been thrown into the stove, ought to have upon the question of the guilt or innocence of the defendant, each is at liberty to judge for himself.

CASE No. 6.

Clarinda Yourdon was tried at Rome, Oneida county, December, 1859, for the murder of her husband, James A. Yourdon, by poisoning him with arsenic.

1. *Symptoms and Circumstances.*

James A. Yourdon, a laboring man, aged about 35 years, lived unpleasantly with his wife. The day previous to his sickness, she was proved to have purchased arsenic. On Friday, (August 28th, 1858,) soon after eating his dinner, he was attacked with nausea and great pain in his stomach. For a while he could not vomit, but after a time he vomited freely. His indisposition, however, during the afternoon, was not so great but that he could work. The next morning there was a renewal of the symptoms, and with increased violence. The sickness continued, with varying intensity, until Monday evening, when he died, evidently in great agony.

The deceased was seen, by the neighbors only, until the day of his death, when a physician was called in. The symptoms described by the witnesses, were the same as those generally produced by arsenical poisoning. Thus there was an intense burn-

ing pain in the stomach, great thirst, almost incessant vomiting and purging, attended with great prostration.

2. *Post-mortem Examination.*

The brain was not examined. The lungs were engorged and filled with dark colored blood. The stomach and upper part of the intestine appeared inflamed upon an examination of their external surface. The other organs were healthy.

I received the package containing the stomach September 5th, five days after the death. Externally the stomach did not present any peculiar appearance, excepting a slight inflammation in those parts corresponding to the great curvature and pylorus, the orifices were secured by ligatures. Upon opening the stomach there was found within a fluid of a dark color, resembling strong coffee, mixed with coffee grounds, this was placed in a tall glass cylinder, that any solid matter might be deposited. The surfaces of the stomach were then carefully washed with distilled water, and the washings added to the original liquid. There was no appearance of ulceration or perforation of the mucous coat, this was highly inflamed, of a bright red hue, much thickened, easily separated from the muscular coat, and readily torn. In some parts of the great curvature the mucous membrane was more than usually thickened, and of almost a pultaceous consistency, readily breaking down on slight pressure. Beneath the mucous membrane were small patches of effused blood.

3. *Chemical Examination.*

It has already been stated that the stomach was thoroughly washed in distilled water. Its mucous surface was then carefully examined by means of a lens, no solid particles were detected adhering to the mucous membrane. The stomach was then finely divided, and two-thirds of the resulting mass submitted to analysis, arsenic was found in it, its weight was 14.58 grains. This quantity seemed to me so extraordinary, that I took the precaution before reporting to the coroner to oxydize the sulphid, the form in which the arsenic was weighed, and reprecipitate it, and again determine its weight. The result was substantially the same as before, after the trial of the case, I submitted the reserved third of the stomach to analysis, and obtained from it 6.82 grains of arsenious acid.

The contents of the stomach and the washings it was stated
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were placed in a tall glass cylinder; after a time the liquid was carefully poured off from the deposit. This liquid which contained a little solid matter suspended in it yielded 2.38 grains of arsenious acid. The deposit found in the cylinder consisted of a single mass, of an irregular oval form (its diameters being respectively $\frac{1}{8}$ and $\frac{7}{8}$ of an inch). This mass had a smooth surface, and was of a dirty white color, it weighed sixty grains. Its consistency was considerable, on being cut into it was evident that it contained gritty particles. A portion, at least one-fourth of it was used in a preliminary examination. After being finely divided, it was treated with ether, the ethereal solution after evaporation left a yellow residue of the color and consistency of butter, and which melted readily by a moderate elevation of temperature. Treated with iodine the reaction for starch was obtained, the presence of arsenious acid in considerable quantities was also demonstrated. The remainder of the mass was then treated by the general method, arsenic was the only poisonous metal found, the quantity of arsenious acid obtained was 24.76 grains.

We will sum up the arsenic contained in the tissues and contents of the stomach. In the stomach there was $(14.58 + 6.82 =)$ 21.40 grains; in the liquid contents 2.38 grains. In (not more than) three-fourths of the solid mass 24.76 grains. Making the total amount actually weighed 48.54 grains. To this ought however to be added, that contained in that portion of the solid mass used in the preliminary examination, and which was not less than one-fourth of the whole mass. As it was apparently homogeneous throughout, we must add $(24.76 \div 3 =)$ 8.25 grains. Hence we have, as the whole quantity of arsenious acid present in the stomach and its contents $(48.54 + 8.25 =)$ 56.79 grains.

The body was exhumed sixteen months after burial and the liver removed. This organ was softened, but it did not appear much decomposed, it emitted, however, an extremely offensive odor. On examination arsenic was found in it in considerable quantities. Its weight was not determined, owing to the limited facilities at my disposal.

The

4. *Resumé.*

of his case presents certain interesting features, which we will describe in detail. We may note first the large amount of arsenic introduced by in the tissues of the stomach, the quantity was so

great, that as I have already stated, I took the precaution to dissolve, reprecipitate and weigh it a second time, to avoid any possible error. How so large an amount could be contained in the tissue, I am not prepared to say. That a considerable quantity was encysted or covered over with mucus, and thus remained undiscovered, I can hardly believe after the careful examination I made of the internal coat of the stomach.

In regard to the mass made up of arsenic, and (in all probability) bread and butter, it may be noticed that at the coroner's inquest the accused made the following among other statements. She said that she knew he had taken arsenic, that on Friday night (it was in the afternoon of that day that he was taken sick) she spread butter mixed with arsenic on a slice of bread, and laid it on a bench by the side of a pail of water, in the morning it was most all gone, she remarked that she knew he had eaten it by the prints of his teeth on the fragment left. How it happened that the masticated particles of bread and butter had not been acted upon by the gastric juice, but became agglomerated into a single mass by the peristaltic action of the stomach, I do not clearly see.

The transmission and reception of the package containing the stomach, may properly be remarked upon. The stomach as received by me was contained in a tin box soldered tightly, this was inclosed in paper secured by strings and seals, and directed to me. I made notes of the appearance of the package, its size, the means by which it was secured, &c., but failed to record the precise direction inscribed upon it. Knowing that the package came by Express, I feared from the number of persons through whose hands it must have passed, that it might be impossible to identify it as satisfactorily as the defendant's counsel might wish, or rather as he would say it ought to be identified. After finding arsenic in the stomach, I informed the District Attorney of the facts mentioned above, and advised an exhumation of the remains, and an examination to be made of other parts more directly transmitted to me; this course he deemed it unnecessary to pursue. At the trial, however, it turned out that the package could not be satisfactorily identified, no two of the half dozen witnesses sworn, being found to agree as to the direction upon it. For this and other reasons, the prosecution, during the early part of the trial deemed it necessary to have the body exhumed, sixteen months had then elapsed since the interment. The liver was then obtained

and delivered to me, and an examination made with the results already mentioned.

This difficulty in identifying the remains demonstrates the necessity of placing remains supposed to contain poison under charge of a responsible party, out of whose immediate supervision they should not pass until personally delivered to the analyst.

CASE No. 7.

Elizabeth P. McCraney was tried at Cooperstown, Otsego county, for the murder of Huldah Ann McCraney, by poisoning her with arsenic.

1. *Symptoms.*

Huldah Ann McCraney, a young lady seventeen years of age, residing in Oneonta, Otsego county, was taken ill with slight diarrhea, on the 28th of April, 1860.

The various symptoms of the illness following this indisposition are only accessible through her nurse and physician. The former, her step-mother, could not be expected to give reliable details. The report of a person unacquainted with medical science, and hence, ignorant how and what to observe, can never, taken by itself, be satisfactory to men of science, particularly in any complicated or unusual case. In addition to this, another difficulty presents itself in the fact that in this case the nurse was the person accused of administering the poison, and for this reason liable to suppress or modify facts which might be of importance.

The testimony of her attending physician, Dr. Samuel H. Case, furnished all we have to depend upon, and is as follows:

Sunday, April 29. Patient slightly indisposed. Tongue furred and white; pulse and skin normal. Diagnosis, disordered stomach and bowels. Treatment, calomel and rhubarb followed by castor oil and senna.

Monday, April 30. No change, excepting that the medicine given yesterday was vomited. Ordered calomel to be followed by castor oil and senna in six hours, and if the bowels should not move, enemata.

Tuesday, May 1. Medicine had been vomited again. No movement of bowels. Ordered a pill of podophyllin every third or fourth hour. An enemata of salt and water. A syringe was provided by Dr. Case.

Wednesday, May 2. Circulation and skin normal. Tongue

colored black. Pain in the limbs; two very slight evacuations of the bowels, about an ounce in quantity.

Thursday, May 3. Bowels confined. No swelling or tenderness of stomach or intestines. Pulse and skin natural, tongue becoming clean; stomach irritable. Ordered to continue enemata.

Friday, May 4. Pulse 80, skin natural, bowels confined, nausea and thirst. Ordered calomel, one grain repeated every third hour. Also sinapism to stomach, and demulcent draughts. Enemata to be continued. (Dr. Case removed his syringe this day.)

Saturday, May 5. No change in any respect.

Sunday, May 6. More irritation. Skin and extremities cool, bowels confined, but not swollen or tender. Ordered Croton oil pills, one every fourth hour, if retained. Enemata continued. (Syringe owned by patient's step-mother being used.)

Monday, May 7. Increased irritability, nausea and thirst. No swelling or tenderness of the abdomen. Pulse soft and more rapid, skin cool. Medicine ordered yesterday had been vomited. Ordered blistering wash to stomach. Enemata continued.

Tuesday, May 8. Pulse 90, increased nausea, thirst and restlessness. Much nervous irritation. Bowels still confined. Symptoms of gastritis. Continue blister to epigastrium and enemata.

Wednesday, May 9. Great nervous irritability, sleeplessness, sighing, and dyspnoea. Slight œdema of eyelids, face and neck. Pulse 100, and feeble. Bowels still confined. Ordered ether and assafoetida; also 1-6 grain morphine, which was vomited. Enemata continued. (This day Dr. Case brought back his syringe.)

Thursday morning, May 10. Patient much worse. Increased œdema of eyelids and face; loud and stertorous respiration, skin and extremities cold, pulse 130, pupils contracted, general exhaustion. Symptoms appeared of congestion of the brain. Enemata ordered of warm water containing podophyllin.

Afternoon. Brain symptoms disappearing. Respiration more tranquil; skin and extremities cold, copious evacuations of the bowels. Pulse more rapid and feeble, tongue swollen, and deglutition difficult. Ordered chicken broth and brandy.

Evening. Countenance natural but slightly swollen. Body and extremities cold; much thirst, pupils contracted and vision lost. Intellect unimpaired, heart's action very feeble, pulse scarcely perceptible.

Death ensued on the next morning.

2. *Post-mortem Examination.*

The body was exhumed and an autopsy held on the eighteenth of May, seven days after death, by Drs. Sprague and Lathrop.

External Appearances.

Face and neck swollen, eye-lids œdematous. Nothing else worthy of notice in the external appearance.

Head. The skull was opened and the brain carefully examined and found healthy.

Thorax. In the right cavity of the thorax were observed old pleuritic adhesions. In the œsophagus small black points were noticed, similar to those described in the stomach and rectum. The internal coat exhibited no inflammatory redness. The remaining viscera of the thorax were perfectly normal.

Abdomen. Externally all the abdominal viscera appeared normal. Stomach ligatured and opened. Contents consisted of about a gill of dark fluid matter, which was transferred to a glass jar. Internal coats of stomach healthy with the exception of a discolored spot two inches in diameter, near the pylorus. Intestines healthy and nearly empty. Rectum opened and examined. About three inches from the anus a dark spot was observed, of the size of a five cent piece, containing an ulcerated point in its center. The mucous coat was softened and thickened in parts.

All the remaining abdominal viscera were perfectly normal in appearance and position.

At this examination the following organs were put up in clean glass jars and reserved for chemical analysis.

Jar No. 1. The stomach and contents.

Jar No. 2. Rectum and other intestines, and œsophagus.

Jar No. 3. Spleen, pancreas, lung, heart, and part of liver.

Vial No. 4. Fluid blood from cavity of thorax.

3. *Chemical Examination.*

The four jars and bottle mentioned were delivered to me for analysis on the twenty-fifth of May, and the examination commenced on the next day.

The stomach contained no metallic substance whatever, but the portion of the liver in my possession contained a *trace* of arsenic. The method pursued in these investigations was the general method of research detailed above. Having found that arsenic was plainly shown in the small portion of the liver exam-

ined, I directed that the body be exhumed, and that various other organs and tissues be delivered to me. This was accordingly done, and on the tenth of June I received the following:

A jar containing ten pounds of muscular tissue.

A jar containing the remainder of the liver.

A jar containing the uterus and appendages, the urinary bladder, kidney, and tongue with its appendages.

Subsequently the following were delivered to me for analysis:

1. A quantity of a dried mixture of corn meal and water, mingled with plaster.

2. A metallic syringe which had been used during the illness of Miss McCraney.

By treating the various organs, tissues and articles above mentioned, the following results were obtained:

The heart and lungs contained a *trace* of arsenic; also the pancreas and spleen.

The two kidneys together contained .05 grains.

The liver, from which the outside had been pared off, contained .10 grains.

The ascending and transverse colon together contained .173 grains.

The descending colon and rectum contained .868 grains.

The remainder of the small intestines, and also about three pounds of muscular tissue, each revealed a *trace* of the poison. The total amount of arsenic thus collected and weighed was 1.191 grains.

Syringe.—This was one of the ordinary pewter instruments, about eight ounces in capacity, and contained a trifle over four grains of arsenious acid. The substance of the metal was thoroughly cleansed and dissolved, and subjected to analysis without detecting the least trace of arsenic.

Meal.—An ounce and a quarter of the dried cake of corn meal, which was alleged to have been prepared for poisoning rats, was examined and found to contain two grains of arsenious acid.

4. , *Resumé.*

This case is rendered peculiarly interesting from the *outré* nature of one of its features. Leaving entirely out of view the moral evidence, including the points bearing on the *motive* and *character* of the murderer, attention is requested to the *mode* in which the poison was administered. The testimony demonstrates

that Mrs. McCraney administered enemata to the deceased during her illness. The instrument which she admits having used on one occasion, and which we are warranted in supposing may have been used oftener, was carefully examined.

On withdrawing the piston, drops of oil were seen adhering to the interior of the barrel. Besides this, it was encrusted in spots with a white deposit, which was tested and found to be arsenious acid. The piston presented a similar appearance, and its packing was encrusted and stiffened by the same white material. The entire amount of arsenious acid obtained from the syringe was more than four grains (4.16).

This is precisely the state of things to be expected from the imperfect solubility of arsenious acid, and its density which would cause much of it to be retained in the syringe when the piston was pressed forward, unless the nozzle was depressed lower than the body of the instrument. It needs hardly to be mentioned that this is almost *never* the case in administering an enema.

Now when we compare the analysis of the syringe with that of the rectum, the case admits of only one interpretation. The former contained about four grains of arsenious acid, the latter .868 grains, or more than double the entire amount collected from all the other parts of the intestinal tract.

The question may arise why the lining coat of the rectum did not exhibit greater evidences of local inflammation than were found at the post mortem examination. The presence of the globules of oil found in the syringe throws considerable light upon this.

We have no means of knowing precisely the nature of the enemata administered, but we are at liberty to assume that oil was an ingredient, and under this supposition, we should not expect to find evidence of much local irritation, it being the nature of oils to protect mechanically the mucous coat of the intestines, and also to render arsenious acid less readily dissolved, thus materially interfering with the absorption of the poison.

The administration of the poison by injection has been particularly dwelt upon from the rarity of such cases, and the peculiar malignity it argues in the perpetrator. Yet, it must not be taken for granted that this was the sole way in which the poison was introduced into the system.

A careful examination of the symptoms reported by the attend-

ing physician would tend rather to support the idea that arsenious acid was at first administered in small doses by the *mouth*.

There was almost constant nausea, and there was much vomiting, whereby the greater portion of the poison would necessarily be rejected, and thus escape detection in an analysis of the stomach, even although sufficient be absorbed to produce the symptoms observed, among which were œdema of the eye-lids and face, thirst, nausea and vomiting, and intense nervous irritation and exhaustion, the usual train of symptoms to be expected to follow the exhibition of repeated small doses of arsenious acid.

Is it not altogether probable that the rejection of the greater part of the poison by vomiting, and the consequent protraction of the illness, suggested to the mind of the poisoner, a more effectual method by which the arsenic would be retained in the body, and thus accomplish its destructive work with greater rapidity, and as she perhaps supposed with less liability of detection?

It may appear to some remarkable, that while the stomach was found free from arsenic, it yet was detected in the liver, &c., this is not however unusual when the patient lives for a considerable time after taking the poison, both Taylor and Geoghegan refer to such cases.

This case is interesting from the character of the symptoms and the mode of administering the poison; it is also important as showing that the absence of arsenic from the stomach does not prove its absence from other parts of the body, it thus illustrates the necessity of a through examination of various organs in cases of supposed poisoning.

CASE, No. 8.

Elizabeth P. McCraney was tried at Cooperstown, Otsego county, February, 1861, for the murder of Allen Baker, by administering to him arsenic in the months of June and July, 1850.

1. *Symptoms and Circumstances.*

June 28, 1850.—Deceased was taken violently ill immediately after eating dinner, he went out into the yard groaning as if in great pain, and began vomiting profusely. He returned to the house where he continued vomiting, groaning aloud, the perspiration streaming from his face. The servant coming in with a pail of water, he asked for a drink. As she was about to hand it to

him, Mrs. Baker (now Mrs. McCraney, the person suspected of poisoning him) first carried the water into her own room, and then returned with some in a glass and gave it to him. After drinking he began vomiting again, and continued to vomit throughout the night.

The next day the domestic prepared some broth for him—on the pretext of *cooling* it, Mrs. Baker took it from the servant and carried it to her own room, (in a part of the house remote from that where deceased was,) and afterwards returned with it and gave it to the sick man—soon after drinking it, he began to vomit anew.

This same circumstance recurred in the case of some porridge which was prepared for him.

From the beginning of his illness to his death, which occurred on the 7th day, the symptoms may be briefly described (on the authority of various individuals, including one of the physicians who attended him), as follows: Dryness of throat, nausea, dyspnoea, great thirst, incessant vomiting and retching, intense burning pain in the stomach and bowels, dimness of vision, restlessness, anxiety, prostration, and muscular spasms.

The body was interred and remained undisturbed till January 9, 1861, a period of nearly eleven years. At this time the minds of the public were occupied by the disclosures made during the trial of Mrs. McCraney, for the murder of her step-daughter, by arsenic. This trial resulted in an acquittal, but so far was this result from quieting the suspicions already aroused, that it only tended to excite a review of Mrs. McCraney's antecedents. The circumstances attending the death of Allen Baker (her brother-in-law) very naturally furnished grounds for investigation, and accordingly his remains were exhumed and delivered to me for chemical analysis.

I have already described some of these circumstances, including a summary of the symptoms of deceased's last illness, but without alluding to the moral evidence which does not properly belong to a paper of this description. Therefore, it only remains to speak of the appearance of the remains, and of the results of the chemical analysis.

2. *Appearance of Remains.*

At the request of the coroner, I went to Milford, Otsego county, January 9, 1861, and there witnessed the exhumation of certain remains, said to be those of Allen Baker.

I took from the grave two jars of earth, as follows: Jar A. contained earth from above the coffin and around the walls of the grave. Jar B. contained earth from below the coffin; these jars were sealed up and remained in my possession till they were analyzed.

The shell (or outer case) and the coffin, with their contents, were removed from the grave, then enclosed in a strong box, properly secured, and delivered to me, remaining in my possession till they were analyzed. Receiving thus, the above, without their having been disturbed, I am able to furnish a description of their condition, which has many points of decided interest both to chemists and medical men.

Among these are:

A. Progress of decomposition of the case, and the coffin and its furniture.

B. The progress of decomposition of a body which has lain in the ground more than ten years, as affected by the presence of arsenic.

C. Identification of the remains as those of the body of Allen Baker.

A. Progress of decomposition of the case and the coffin and its furniture.

The case was considerably decomposed. The pine wood of which it was formed being very friable around the edges and surfaces. In the central portions the wood was quite firm, the cover, for example, was found capable—its ends being supported—of sustaining a heavy weight (300 pounds) without breaking.

The wood (pine) of the coffin had suffered little change by decomposition, so little that it was not more easily broken than ordinary wood of the same kind.

The lining of the coffin (muslin) was completely decomposed. The shroud had disappeared from the limbs and upper surface of the body, but was more or less completely preserved on the sides and under surface; that on the sides scarcely holding together, while that on the under surface was tolerably firm, but could easily be pulled apart; although the case was so much decomposed there was no earth between it and the coffin.

About one quart of water was found in the coffin, demonstrating how little it had been affected by its burial.

B. Progress of decomposition of the body.

1. *Bones.* The remains were blackened, the skull nearly bare, the ribs projecting and destitute of covering. Most of the bones of the skeleton were in their natural position. The lower jaw had fallen down and rested immediately below on the upper part of the chest. The ribs had fallen forward, but nearly all retained their relative position to each other, a few were more displaced and rested upon others and upon the bottom of the coffin. The bones of the arms and legs were in their natural position. The bones of the feet had separated from their connections and lay together at the foot of the coffin.

The skull was sound, as were all the bones, so far as could be ascertained, they weighed twenty pounds.

In the upper jaw the following teeth were present: On the right side the third molar, the bicuspids, the canine and first incisor. On the left side the incisors, the canine and second bicuspids. In the lower jaw the following teeth were present: On the right side the incisors, the canine, the bicuspids and first and second molars. On the left side the incisors, the canine and the bicuspids.

A number of the teeth were loose and so easily detached from their sockets, that in cleaning the skull a number dropped out, as indeed may have happened previously. That this had actually occurred was also probable from the fact that the cavities corresponding with a number of the teeth were not filled by natural growth, as would have been the case, in all probability, if they had been removed during life.

2. *Hair.* There was abundance of hair lying upon the pillow (formed of shavings) immediately back of the head. Hair was also found in smaller quantities on either side of the skull.

3. *Brain.* Upon opening the skull the dense fibrous membrane (the dura mater) which lines its interior, was found quite perfect in those parts corresponding to the occipital and parietal bones.

In other parts it was more or less completely decomposed. Small portions of the arachnoid and pia mater could readily be distinguished.

The brain weighed twenty-seven and a half ounces. It was, generally, of a dull white color, the cerebellum and the posterior part of the cerebrum were but little changed, so that the white and grey substances composing the brain could readily be dis-

tinguished. The medulla oblongata was firm and nearly perfect in its upper part, but soft and pulpy in its lower part.

4. *Muscular tissue.* The muscular tissue covering the head, neck and anterior face of the trunk and limbs was decomposed.

Upon the sides and posterior face of the same parts it existed in considerable quantity, but much modified from its original character. Generally it was of a light reddish color, of the consistency of a moderately hard fat, easily broken down by pressure, some portions were of a darker color and much softened.

The muscular tissue found upon the legs and loins weighed twenty-four pounds, that upon other parts weighed six pounds, giving as the whole weight of the muscular tissue thirty pounds.

5. *Contents of the thorax and abdomen.*

The contents of these cavities were much decomposed, so that with the exception of the liver and lungs (recognized by their structure) the viscera could not with certainty be distinguished. The matter found in these cavities was mostly in a pasty condition, and of a dark color, it weighed somewhat more than five pounds.

6. *Gloves.*—The bones of the hands were enclosed in gloves of a nut brown color, they were of silk, and perfect in every part.

C. *Identification of the remains.*

In the determination of this important point, there was much less difficulty than might very naturally have been expected in consideration of the length of time that had elapsed since burial.

The grave was recognized and pointed out by the man who had digged it.

The remains were identified by such peculiarities as the following:

1. The length of the skeleton, making due allowance for inevitable changes, as dissipation of cartilages and soft parts.

2. Conformation of the skull.

3. Position and number of teeth, some having been lost during life.

4. Color of hair and whiskers.

5. Length and situation of whiskers, they being found in the coffin, on either side of the skull, and none being found beneath the jaw, thus conforming to the description of *side whiskers* and absence of those on the chin.

6. The silk gloves found enclosing the bones of the hand. These assisted materially in the recognition of the remains, because at the time of the funeral they were generally considered as an infringement, or rather departure from the established funereal costume.

3. *Chemical Examination.*

From the nature of this case the chemical examination was much more laborious than in the case of a recent corpse. This labor did not arise from any unusual difficulty in analysis, so much as from the greater extent, it was deemed advisable to carry the research.

Attention was particularly directed to the following points:

A. Did the remains contain arsenic?

B. Did the material of the coffin contain arsenic originally, and if so, might it not have contaminated the remains?

C. Did arsenic exist normally in the soil; if so, might it not have contaminated the remains?

D. Was the arsenic found in the remains administered during life, or introduced after death?

E. Was there sufficient arsenic present to produce death?

A. Did the remains contain arsenic.

The general course of the examination was conducted in the manner already mentioned, some variations, however, were deemed advisable, which will be described hereafter.

After a most careful and thorough preliminary examination of the various reagents and vessels, four ounces of the material contained in the cavity of the thorax were examined, and abundant indications of arsenic found. It may be stated here, that in consequence of the slight consistency of the materials contained in the thoracic and abdominal cavities, and the disturbance they necessarily underwent during the transportation of the remains from the grave to my laboratory (more than one hundred miles), that it was found impossible accurately to determine what parts were normally contained in each cavity. Hence, in the examinations hereafter noted, it is not at all unlikely, but from the results extremely probable, that parts of the alimentary canal were included in the thoracic portions.

1. *Brain.*—The contents of the skull, after being treated according to the general method, furnished a liquid, which was introduced into a Marsh's apparatus, (which had been running two

hours without the production of any deposit in the reduction tube) two small stains were produced on porcelain, and slight stains were obtained in the reduction tube. The stains on porcelain disappeared immediately on the application of hypochlorite of soda. One of the tube deposits was converted into sulphid; chlorohydric acid gas had no effect upon it, but it dissolved readily in ammonia. Thus demonstrating the presence of arsenic in the brain.

2. *Thoracic contents.*—The matter from the right side of the thorax, i. e., between the vertebral column and the ribs, yielded 0.552 grains of arsenious acid. The matter from the left side of the thorax contained 0.881 grains of arsenious acid.

3. *Abdominal contents.*—The matter from the right side of the abdomen, i. e., between the vertebral column and right pelvic bones yielded 0.349 grains of arsenious acid. The matter from the left side of the abdomen yielded 0.412 grains of arsenious acid.

4. *Muscular tissue.*—Two pounds of the muscular tissue from the right thigh yielded abundant evidence of arsenic, its weight was not determined. The muscular tissue from the loins, legs and back was finely divided and then thoroughly mixed. Two pounds of the mixed mass was examined, it yielded 0.039 grains of arsenious acid; on the supposition that this was an average specimen, there must have been present in the whole mass of thirty pounds, 0.585 grains of arsenious acid.

5. *Bones.* Before examining the bones they were scraped as clean as possible and then thoroughly washed in water. The femur, patella, tibia and fibula of the right side yielded a small quantity of arsenic. In six ribs, the sternum and the clavicle of the right side, arsenic was also found. No quantitative determination was made of the arsenic in the bones.

6. *Debris* from the bottom of the coffin. Two pounds of the debris from the bottom of the coffin yielded 0.030 grains of arsenious acid.

7. *Weight of arsenic found in the remains.*—In the thoracic cavity was found 1.433 grains, in the abdominal cavity 0.762 grains, in two pounds of muscular tissue 0.039, in two pounds of the debris 0.030, giving as the total weight of the arsenious acid found in the coffin, as actually weighed, 2.264 grains. But this does not represent the whole quantity present. The 28 pounds of muscular tissue not examined, contained, according to an average specimen, 0.546 grains, which, added to 2.264 grains the amount weighed, makes the total 2.810 grains.

No reference has as yet been made to the arsenic contained in the four ounces of the thoracic contents used in the preliminary investigation, nor of that contained in the bones; as any calculations regarding the amounts contained in these parts would be rather unsatisfactory, we have not deemed it best to present them. In view of the various results obtained it seems not unreasonable to believe that, at least, three grains of arsenic were present, in and about the remains.

B. Did the material of the coffin contain arsenic originally, if so, might it not have contaminated the remains. This examination was made, not so much in the expectation of finding arsenic as to prevent an ingenious counsel from taking advantage of the omission of such an examination.

1. Two pounds of the wood, composing the lid and upper part of the sides and ends of the coffin were taken for analysis.

The method of Danger and Flandin was used in this case, viz: the wood was finely divided and mixed with one-third of its weight of sulphuric acid, and heated, stirring the mass continually, and finally evaporated to dryness.

Another portion of sulphuric acid was then added and the mass again evaporated. The dry and friable carbon remaining was moistened with a mixture of two parts of nitric acid and one part of chlorohydric acid, and evaporated to dryness. When cold the mass was finely pulverized, boiled with water and filtered. The carbon remaining on the filter was carefully washed, and the filtrate, after concentration, added to that which first passed through the filter. The colorless liquid thus obtained, treated in Marsh's apparatus, gave neither spots on porcelain, nor deposits in the reduction tube.

2. Two pounds of the wood, from the bottom of the coffin, were treated as above, and was found to contain a small quantity of arsenic.

3. The screws of the coffin were next examined, they were nearly perfect, only rusted upon their surface. A number were introduced into a Marsh's apparatus and sulphuric acid added, abundant evidence of arsenic was obtained.

Although arsenic was found in the wood of the bottom of the coffin, where it was in contact with the remains, yet as none was found in the wood of the lid and upper part of the coffin, even in those parts immediately in contact with the screws, we can-

not but come to the conclusion that the materials of the coffin did not contaminate the remains with arsenic.

C. Did arsenic exist naturally in the soil, if so, might it not have contaminated the remains? Although the amount of arsenic found in the remains was large, the coffin quite perfect, and though no earth had washed between the case and the coffin, circumstances, which alone, (from the known insolubility of the arsenical compounds contained in certain soils) would render it impossible for the earth, even if arsenical, to have contaminated the remains, it was deemed advisable to examine the soil. A number of examinations were made of each specimen, two pounds being used each time. The following was the method pursued :

The earth was treated with dilute solution of caustic potash, which was allowed to act upon it for twenty-four hours. The mass was then gradually heated and evaporated, water was then added, and the mixture boiled, then filtered, and the residue was treated successively with chlorohydric acid and chlorate of potash, nitric acid, and finally with sulphuric acid.

These solutions were in different cases examined separately and collectively, with the following results :

In the earth of jar A, that taken from above the coffin and around the walls of the grave, no arsenic was found. In the earth of jar B, that taken from below the coffin, arsenic was found in sensible quantities in the potash solution, and in traces in other preparations.

From the results stated above, we must draw the conclusion that the coffin was the source of arsenic in the soil, and not the soil the source of arsenic in the coffin. If it were otherwise, we would expect to find arsenic in larger proportions upon the exterior of the remains and in the debris on the bottom of the coffin than in other parts, and pretty equally diffused over the whole mass of the remains, while analysis shows the contrary to be the fact.

D. Was the arsenic found in the remains introduced during life? This most important question may be answered positively in many cases where the person has been dead but a short time, by an examination of the various organs and tissues; in other cases where the person has been long buried, an answer cannot with certainty be given from a chemical analysis alone. It may be stated that this question was forcibly impressed upon our minds, not alone from the nature of the case, but from the fact that the

coffin was opened, and exposed to the examination of a crowd of people. Before answering the above question, it seems important to consider three others: 1. Was the poison generally diffused; 2. Was the poison equally diffused; and 3. In what combinations did the arsenic occur.

1. *Was the poison generally diffused?* In this case arsenic was found not only in the mass resulting from the decomposition of the viscera, but in the muscular tissue and even in the bones. It was in fact found universally diffused as we might expect if given during life.

3. *Was the poison equally diffused?* In the majority of cases of poisoning it is in the intestinal track, especially in the stomach, that the larger quantity of arsenic is found. The partially decomposed viscera in this case could not with certainty be identified or separated, owing, as has been said, to their consistency and to the agitation to which they were subjected during transportation, and hence separate analysis of the various organs could not be made. The greater part of the arsenic separated was in the thoracic and abdominal cavities, where, under the circumstances, we would have expected to find it if given during life.

3. *In what combination did the arsenic occur?* Arsenious acid is the common form in which arsenic is introduced into the system. By the decomposition of a body containing it, it is converted more or less completely according to the quantity present, and its mechanical condition, into the sulphid of arsenic, by the sulphydric acid generated. When detailing the chemical examination, it was stated that some variations were made from the general method ordinarily pursued. These variations were made for the purpose of answering, at least in part, the interrogation just presented.

The thoracic and abdominal contents were treated similarly, as follows: The mass to be examined was mixed with dilute chlorohydric acid, and gently heated for an hour, when it was converted into an almost homogeneous mass; it was then filtered and thoroughly washed, (this solution was treated according to the general method.) By this means any arsenious acid, and its combinations with the bases, would be obtained in solution. The residue was digested with dilute ammonia and sulphid of ammonium, at a gentle heat. The mixture, while warm, was strained and filtered (operations conducted with extreme difficulty), and the filtrate examined for arsenic. The menstrua just mentioned

it was believed would dissolve any arsenic that might be present in the form of sulphid. From this solution the greater part of the arsenic found in the cavities was obtained; the residue from the above was treated according to the general method.

The following are the results obtained in the examination of the arsenic found in the right side of the thoracic cavity:

The weight of arsenious acid obtained from the chlorohydric acid solution, 0.041 gs.; the ammonia and sulphid ammonium solution, 0.551 gs.; the residue remaining after the treatment with the above menstrua, furnished but an inconsiderable quantity of arsenic; its weight was not determined.

From the above statements and results we conclude that the arsenic was introduced into the body during life.,

E. *Was there sufficient arsenic present to produce death?* How small a quantity of arsenic may prove fatal, we cannot certainly say. In most cases where a person dies from its effects, the quantity taken cannot be ascertained.

The smallest quantities that have proved fatal, so far as I can ascertain, are the following: Dr. Letheby communicated to the Pathological Society of London, a case in which two and a half grains of arsenic, contained in two ounces of fly water, killed a healthy, robust girl, aged nineteen years, in thirty-six hours. Dr. Castle, of Leeds, reports a case where a woman took half an ounce of Fowler's solution (arsenite of potash), in unknown doses during a period of five days. She then died. The quantity of arsenic which here destroyed life, could not have been more than two grains. (Taylor on Poisons.)

Dr. Lachèze (d'Angers), knew two individuals to die, the first after seven, the second after ten weeks, after having taken in two days, and in four doses, two grains of arsenious acid. (Flandin *Traité des Poisons*, t. i., p. 493.) Dr. Taylor says that the facts just mentioned will justify a medical witness in stating, that under circumstances favorable to its operation, the fatal dose of this poison is from two to three grains. According to Dr. Lachèze, one or two grains may act fatally in a few days.

The quantity of arsenic separated and actually weighed, was in this case, somewhat more than two grains and a quarter, and as has been already mentioned, the quantity present was in all probability more than three grains.

From a consideration of the facts and opinions mentioned above, we are satisfied that there existed in the remains a quan-

tity of arsenic sufficient to cause the death of an adult, if given under circumstances favorable to its action. It is evident that the amount contained in the remains does not represent the quantity taken, which in all probability was much larger, the greater part being removed from the system during life, by vomiting and purging.

Article 4. The Protective or Prophylactic Preventive, and some points in the curative uses of Quinine, applicable to miasmatic localities, and in miasmatic diseases. By STEPHEN ROGERS, M. D., New York city.

For more than two hundred years, something of the medicinal properties of the Peruvian bark has been known to the profession, though the Jesuits, its probable discoverers, controlled its employment for some period of time.

Its value from its early medical history, down to our own day, has been very universally acknowledged by the civilized world, and has doubtless been incalculable.

But along with lime juice, chloroform, and ether, and like steam in philosophy, and the galvanic fluid in chemistry, it has been reserved to our own century, to our wonderfully advanced scientific and clinical investigations, to develop the native resources, and to disclose the hidden qualities of the "Jesuit's bark," and to appropriate them in the most advantageous and skillful manner, to the prevention, and alleviation of the sufferings, as well as to the cure of the diseases of humanity.

Often during my residence in that country, over which Pizarro, with his thousands of followers, traveled to their "El Dorado," and to the home of the Incas, have I congratulated myself upon having come into the world after the discoveries made by those adventurous spirits, had grown into certain and practical utility to mankind.

The terrors of pestilence, and death, suffered by the early Spanish explorers, and gold hunters, in the tropical and miasmatic regions of their new world, were most shocking, and to us almost incredible. Expeditions sent into those countries in our own day, with all the aids of advanced science and medical discoveries, suffer severely enough, as is well known.

Though cinchona has been one of the most universally employed articles of the *Materia Medica*, for so many years, we have no record of its having been employed, other than as a *curative* agent, till within a very few years.

The Jesuits had an idea, that a fever cured by it, as they employed it, which was in the form of infusion of the fresh bark, would not recur, that the individual was permanently protected by it. I need not say, how completely time has dispelled that delusion.

But that it possessed the power to *prevent* miasmatic infection, was not, so far as I have been able to ascertain, suspected by them. This idea is, in all probability, a modern one, dating, there is reason to believe, only a very few years back. The labors of the chemist, in producing the concentrated form of the active principles, thus rendering it vastly more generally available, was one of the triumphs of science, in the development of this mighty agent; but the supposed discovery, that this product could be depended upon, in all its now extensive, even universal applicability, as a *preventive* of the *infection* which produces the disease, exalted it to the very highest rank among medicinal agents, and placed cinchona, with its principles, in the proud position of an especial gift from Divinity.

If it have this power, he who first made the discovery, deserves a monument to commemorate his act, as truly as does the immortal Jenner.

I have not been able to get a reliable history of this might be, fortunate individual, but the evidence is strong, that whoever he be, his experiments were made with the bark, and not with the quinine.

About the year 1850, earlier or later, the first records of the employment of quinine for the purpose of *preventing* infection were made.

But there is much doubt in my mind, if any of these authors, who have recorded their experience in this matter, really mean to express a belief, that quinine, taken to the extent of influencing the nervous system to a sensible degree, will, during such influence, prevent infection from miasm, whatever the character of the exposure. Indeed, one of the earliest advocates of the prophylactic use of quinine, as he terms it, quoted in a recent paper, by the sanitary commission, recommends "that its use be continued, not only while the men were exposed in unhealthy localities, but for at least fourteen days after they had returned on board, in order that the antagonistic influence of the medicine might be kept up until the incubative period of the disease had passed."

Had he believed in the power of quinine to prevent infection

he certainly could not have found necessity for continuing the administration after the person had been removed from the poison. Even Professor George B. Wood's evidence in this matter, quoted by the same commission, I have my doubts about the intended meaning of. He says, "there is no prophylactic measure against the miasmatic fever, at all comparable in efficiency to the use of this medicine. It seems reasonable to suppose, that the same impression on the system, which prevents the return of the paroxysm will prevent the occurrence of the first."

When we hereafter see that for a period of four years I was constantly inhaling the noxious atmosphere of the miasmatic localities of the isthmus of Panama and did not suffer a single attack, though I was frequently obliged to resort to quinine to prevent it, and of course must have been infected deeply, my doubts as to what Dr. Wood's real sentiments are in this matter, may be comprehended.

For four years I prevented the first paroxysm, which he thinks is to be reasonably expected, but I did not prevent infection.

Hence I see no reason to believe that he intends to state as his belief, that this article will prevent infection.

Nor is this use of quinine one into which a person would be led by force of reasoning, as this most respectable author would seem to imply from his language, when he says, "upon the same principles as those on which periodical disease may be cured, they may also be prevented by the sulphate of quinine."

For example, almost every one has seen an approaching paroxysm of intermittent broken completely up, and the patient cured of the attack, by an intoxicating dose of brandy or other alcoholic drink; and yet who would think of keeping a man constantly under the influence of this class of stimulants to protect him from miasmatic poison.

Emetics are well known to frequently arrest the development of a paroxysm, and to break up the order of an attack, and even cure the disease; still no one in his senses could, from that fact, arrive at the conclusion that to protect an individual from infection it were only necessary to keep him continually nauseated.

So that if quinine produces a curative impression upon the same principle that it produces a protective one, it must have properties peculiar to itself which must be discovered by experience, and not arrived at by reasoning.

But if the professor means to say that the same principles are

applicable to the symptoms of *poisoning* and to *probable* disease; as to the treatment of *developed* fever, no doubt can be entertained of the truthfulness of his position as we shall see.

We could go on almost indefinitely bringing quotations from authors who have written more or less upon the subject, but at the end we should remain in the same state of doubt as to their *precise* opinions that the extracts above quoted have left us in.

It is singular, but nevertheless true, that all of this ambiguity arises from the employment by all of these authors, of a single word whose signification is by no means well defined. I allude to the word *prophylactic*. On this account we will cease to employ it, and adopt in its place the word *protective*, whose signification is too obvious to admit the possibility of a doubt.

I make this explanation by way of apology, for what might appear to be an unceremonious discharge of a term which has been so long and so illustriously patronized. Our remarks then will be made in the following order, viz., first, the *protective* uses of quinine; second, its *preventive* uses; and third, its *curative* uses.

Among the first, if not *the* first dangers the emigrant is exposed to after his arrival in a miasmatic locality, whether in the tropical regions of the world, or in our own country during the hot seasons of the year, are those attending the fever known by the various names, *Remittent*, *Bilious Remittent*, *Climatorial*, *Acclimating*, *Climate Fever*, and as I have (for the greater simplicity in my Lectures on Diseases of Tropical America, of which this paper is an extract), called it the "*First Miasmatic Fever*."

Consequently, the first, the invariable, and the inevitable enquiry is, what can be done to avoid them?

Such in truth should be the enquiries; for with comparatively rare exceptions, these first paroxysms of miasmatic fever are by far the most severe and immediately dangerous, of any the individual will ever suffer, however long he may remain in the unhealthy region.

This is *the* fever, which both in the West and in the East Indies, in Africa and in tropical America, has given the forbidding and terrible character to tropical fevers, which is pretty universally entertained. It is of paramount importance then, for the recently arrived resident to adopt all possible means to escape this particularly dangerous attack.

But the query arises, as he is to become a permanent resident,

will he not sooner or later certainly suffer his first, and this severe type of fever?

This is so rational an enquiry, that it deserves a careful attention, particularly as it has an important and intimate connection with the subject of this division of our paper.

The law relating to this fever is similar to, or identical with that observed by yellow fever, in localities where it is an annual endemic, viz: the longer one resides under any circumstances, in the locality where it is suffered, the less liable he becomes to its attacks.

A species of toleration of the surrounding influences is acquired, lessening the impression of the poison upon the sensorium; so that after more or less time, aided perhaps by a depression of the powers of life and consequent want of vital force to sustain a violent contest, the intense and destructive character of the fever ceases to occur, except in the rare cases just alluded to.

This fact was stated by Dr. James Johnson, to be also true, to more or less extent, of a continuous high temperature; and he attempted to employ it in explanation of the fact, that Europeans did not suffer yellow fever in East India, becoming "seasoned," as he termed it, by the long sea voyage through the tropics, and a long time in them.

But this distinguished man's theory in this matter, was like many others he entertained, destined to meet opposition, and to be finally overthrown.

I know positively, that persons who have sailed twice through the tropics, and have besides cruised for months in the tropical zone, have taken yellow fever when exposed to it on the Pacific coast of this continent.

Time then, as well as locality, is requisite for this acclimating process.

How is it to be secured in necessary amount, with any degree of certainty?

I do not hesitate in replying, that it can be done by the proper employment of quinine. But this toleration and acclimation not infrequently occur in miasmatic localities, with no aid from the medical art.

Some favoring circumstances, such as removal from the poison during hours of sleep, or the exposure occurring only for a short time, at long intervals, or some peculiar resisting force of constitution. Quinine, by interfering during a part of the time,

with the poisonous impression, I have no doubt has often protracted the period before the first fever, so much that the degree of constitution change required for the modification of the febrile symptoms takes place. A very common error upon this point is entertained and promulgated by high authority.

Even our sanitary commission have published extracts, and have adopted the doctrine, that the quinine, if it have not the effect of arresting the paroxysms, "will always render the disease milder."

We have just seen how it may do so, that it does so in an indirect way, by giving time for acclimation.

The simple introduction of quinine into the system daily for an indefinite time, I have never seen any reason to believe, has anything to do necessarily, with such modification.

I would not like to make such a statement as this commission have, without first taking a certain number of persons about to be exposed to active miasm, and keep one-half on quinine, for some days previous to exposure, and when they were thrown into the miasm, treat them all alike.

If the result showed that those who took quinine beforehand, suffered less than those who did not, then it would be legitimate to attribute the advantage to the quinine.

My experience in this matter has thoroughly convinced me, that the real facts in the case are, that the longer the quinine taken, enables the individual to escape the first miasmatic fever, the more it will be modified, and the milder it will be; but no matter what the quantity taken may have been, if the fever notwithstanding comes on early, no such amelioration in its phenomena will be experienced; it will be in every respect like an undisturbed acclimating fever.

And on the other hand, I have no recollection of ever having seen a case, which by reason of the accidental favorable circumstances we have just enumerated, passed any considerable period of time, as for example a month or two, in miasmatic exposure, without suffering the disease, but had it in a more or less modified form.

From my experience in this particular, I came to congratulating myself and the individual, whenever I saw him passing thirty to forty days of exposure, without symptoms of fever; for I then felt an almost certainty, that when it did appear, it would be in a mild form. But I do not entertain the slightest doubt, that

quinine possesses the power of preventing for an indefinite period, the paroxysms of miasmatic disease.

Nor have I any more doubt, of its power to *protect* even from the *impression* of the poison, which eventually results in the appearance of the phenomena, called symptoms of miasmatic fever.

This is the *protective* action of the medicine, and is the subject of this division of our labor.

My most extended experiments upon this point, were during a period of about one year, and were made upon sailors coming to the port of Aspinwall; of whom I received an unquestionably correct account during their absence from me; though besides, solitary cases, occasionally occurred, during the last three or four years of my residence in the tropics.

Where I first obtained the idea that this poisonous impression or infection could be prevented by the use of the medicine, I have no recollection; probably from some of the medical journals of the time.

At all events, I claim no originality in reference to it. But I have a distinct recollection never to have heard, nor to have read, from any person or anywhere, a suggestion as to the manner of administering, or the quantity administered, so as to produce the desired result with any degree of certainty.

In this respect therefore, I do claim originality, though it is a matter little flattering to one's vanity, from the fact of almost being forced into it, by the experience with the quinine in preventing paroxysms. By this I was taught, that doses too small to produce a sensible and decided impression upon the nervous system, were not to be depended upon.

Why I asked should they be reliable in preventing infection?

This enquiry then, clearly implied the chief principles, to govern the management of an individual during exposure.—Accordingly four grains of the sulphate of quinine were ordered, and instructions given to repeat it, as the *evident* impression it produces upon the brain and nervous system should begin to subside. Any case which did not experience impression from this quantity, was ordered larger doses, till he did feel that some unusual action was going on within him. Some cases did not require more than three grains, but the rule was, to obtain an influence upon the system, appreciable in some manner, and neither stop short of that, nor exceed it, if possible to avoid it.

I soon found that once in twelve hours was sufficiently frequent

for most persons, few constitutions eliminating the absorbed drug sooner.

I have seen cases wherein no influence was evident after eight hours. Such ones require three doses in the twenty-four hours according to the theory, instead of two.

The remaining point in the principles of this management was also suggested by my experience in the treatment for *preventing* the paroxysms of fever, and was strongly supported by the theory of the protective action of the medicine. As in preventing the paroxysms, I had been led to suspend medication the moment the premonitions disappeared; so in preventing *infection*, there appeared especial propriety in suspending the medicine as soon as exposure ceased. Hence the hour for sailing was the hour for laying away the powders or bottle also, and it was not again touched till the return to port.

The result was, that not a single person unineffected before, suffered any febrile attack, so far as I was ever able to learn.

These same experiments, and the continuation more or less constantly since that time of the same management, with such modification as commencing before arriving and continuing for a time after leaving the port, and the results are described in a letter from the president of the Panama railroad company, to Dr. Wm. H. Van Buren, of the sanitary commission, as well as one would expect a layman to do it. The letter is published in the commissioner's document, on the prophylactic use of quinine.

The excellent author of this letter, I am surprised to see, has also availed himself of it, and of the partisan's license, to extol the salubrity of the city of Aspinwall. But these experiments would have been less conclusive and interesting but for the occasional occurrence of meeting an obstinate and self-willed sailor or officer who would not take medicine so long as he was well.

One of these occasions was with a vessel which came to port with almost every one on board fresh hands, that being their first voyage. Among them were three persons who refused to take medicine, as that was not in their contract. After remaining at the wharf about three weeks she sailed. These three persons were taken with fever on their way home, and went to the hospital on their arrival in New York. All the rest had uninterrupted health. So many similar cases occurred during those observations and during my residence in the country, I was compelled to accept them as cause and effect, and not mere coinci-

dence. In fact, I was forced to believe in the "protective" power of quinine, but I did not yield without first carefully canvassing all of the many facts which had come to my knowledge relating to the behavior of miasmatic poison upon a promiscuous population. For example, I had frequently seen persons come into the country and expose themselves for many days in succession to the sources of miasm, and go away perfectly well, never hearing or feeling any the worse for it, and without taking a grain of quinine or other medicine. Again I had seen other cases seriously infected by only a few hours' exposure; yet, after all, the results of my experiments were so uniform I could not possibly attribute them to anything else than the quinine. I have never had a doubt that many of the persons to whom I gave quinine, would have escaped the infection had they not taken it, for it is no unusual thing to meet persons who do escape it for days and weeks together with no medical aid. Neither have I any more doubt that all of those who did get fever, would have escaped it had they taken the quinine as they were desired to do.

This fact of the great difference in susceptibility to miasmatic poison seen so frequently, is not sufficiently considered in making up the conclusions to which most of the writers on this subject of the preventive use of quinine have arrived.

The sanitary commission have published some remarkably illustrative reports of this fact. For example, a surgeon states that seventy-seven men went up an African river; (how long they were gone we are not told, but from the context it would appear, only about one day and night) they all took a dose of quinine when they started, and carried along another dose to take at night, except one man or officer. 'This one was the only one of the whole seventy and seven men, who suffered fever, supposed to have been contracted on that occasion.

Now, I do not propose to deny, that this person became infected during the exposure stated, but I do believe, that for one, who would have contracted fever upon so slight an exposure, a score or more, would have escaped entirely, with no medication whatever. Hence the inference, that the seventy-six men were protected by quinine, is by no means well drawn. The same document publishes another report, as one favorable to the use of quinine, which is richly worth a notice, as a sample of the extraordinary delusions, even physicians, will be occasionally led into.

Thirty-two officers and men went up the Rio Ponga, and remained in the river two days and two nights. They took four grains of quinine daily. Four cases of fever occurred. On another occasion, thirty-four men were sent into similar exposure, for seven or eight days, and took a dose of quinine *every other day*.

Of these, seventeen had severe *remittent fever*. We see that in the first case, twelve and a half per cent of the whole number, took fever after two days exposure, notwithstanding the daily dose of quinine. And in the second case, fifty per cent fell sick, after seven or eight days of exposure; and with the dose of quinine on alternate days. These results compare very badly with those from similar exposure of thousands of our countrymen, whom I saw in former years crossing the Isthmus of Panama, by the way of the Chagres river and the mule route. This transit rarely occupied less than forty-eight hours, often from three to six days, yet the per centage of fever cases contracted during it, never amounted to anything like twelve and a half per cent, though not a grain of medicine was taken.

Results like that of the second case, would have driven the Californians all by the overland route.

My mind can not resist the evidence afforded by this comparison, that every grain of quinine given in these cases was completely thrown away. And yet, the author of this report comes to a conclusion, which is the most unaccountable part of the whole affair. "It is not to be supposed," says he, "that quinine will prevent the occurrence of fever in every case, but in a sufficient number, to be of the utmost benefit, and the fever occurring in those cases in which it has been employed as a prophylactic, is sure to be of little moment," though we have just seen, that fifty per cent of his cases had "*severe remittent fever*."

The fact, then is, that there are great differences among constitutions, in respect to susceptibility to the influences of this miasmatic poison; some resisting it many days, as we see in the case of the thirty-four men just related, of whom only fifty per cent became infected during the seven or eight days of exposure to which they were subjected. Others require only a day or two, and in a few *rare* cases, as I have abundant reason to believe, a few hours are sufficient to produce such infection.

All these facts therefore, must be taken into account, in estimating the real effect of quinine in any given cases, lest this drug

gets the credit of what really was performed by the unaided "*vis medicatrix naturæ*." I took much pains to do this in the cases from whose results, my conclusions were drawn, that quinine *will protect from miasmatic infection*.

This power conceded to it, the query very naturally arises, how long may it be relied upon as such protective. This is a much more difficult question to work out a reply to, than would generally be supposed, by those who are not acquainted by experience, with the details of this proposed management. A man is rarely found who will submit to an interminable drugging, particularly if it be urged upon him while in perfect health, as it must be, in such an experiment as this.

On this account, I was always unable to determine the limit; but I feel able to reply with confidence, that it may be depended upon for at least thirty days: generally double that time, which is long enough for any useful purpose.

The various published reports touching this point, (among them one is published by the Sanitary commission, stating that in one instance, a period of one hundred and forty days seemed to make no difference in the action of the drug, and supposed to be conclusive of its permanent power), nearly all refer to its action as a preventive of paroxysms, and not a protective from infection. This one hundred and forty day case is particularly so; so that as a matter of interest to this point, it is worthless. This protective power is of the greatest utility to the transient resident, who may desire to get off, without carrying with him the poisonous impression, which will eventually develop into disease.

If this residence is not to be more than sixty days, and there are weighty reasons for avoiding any possible subsequent trouble, I would urge the continuation of the impression of the medicine, to an unquestionable degree, the whole time. If it is to be much longer than two months, I would not think of keeping up such influence longer than thirty days, because, as we have seen, a residence of that length of time in the locality, will have so modified the constitution, that any fever symptoms he may suffer after will be of mild type, and very amenable to the preventive treatment. As to the amount of the dose requisite to produce the desired effect, it is obviously impossible to determine precisely. Whether it is absolutely necessary to give sufficient to produce the nervous impression or not, I am by no means certain.

But as there is clearly much doubt, short of this evident effect, as to whether your medicine is acting or not, I have always thought it a safe error, if error at all, to be thus far certain, and I recommend its employment in the same manner, viz: never give it in doses too small to be felt in some way.

For further and fuller understanding of this important point, I wish to state, that though ringing of the ears, with occasional impairment of hearing, is the almost universal sign of the quinine action, there will not infrequently be a sudden voracious appetite, or a tremulousness of the hands, or a queer feeling of fulness of the head. Two medical gentlemen of my acquaintance, almost invariably experienced in their own persons, as the only evidence that the quinine was acting upon the system, a sudden activity of the kidneys, and copious secretion of limpid urine. Now, in making a rule for the protective administration of quinine, we must bear in mind the cases of great susceptibility to miasmatic poison, which is so marked in some as to render only a few hours exposure, as we have seen, quite enough time to seriously infect them; and as it is impossible to tell how many of such ones any party or army may include, it is very advisable to treat them all as such cases, especially as it can do no hurt; the quinine being as harmless an article in such doses as any alcoholic stimulant in moderate amount.

The rule then for all cases is, when men are about to be exposed to miasm, give them from three to five grains—according to known effect—before exposure, and repeat the dose once in *twelve* hours, during the whole period of exposure, up to about thirty days in the *permanent* resident; extending it even to sixty days in the *transient* resident, where there are peculiar reasons for desiring to avoid subsequent miasmatic disease; not forgetting that cases often occur, wherein it will be necessary to repeat the dose once in *eight* hours to keep up the required *quinine effect*, which is our only certain guide, and is to be carefully watched and maintained in all cases.

Another rule is, no quinine is required after exposure ceases. The form in which it may be given, is not a matter of enough importance to occupy time with here.

2. *Prevention.*

Miasm and miasmatic poison, still remain impenetrable mysteries to the profession. What is miasm? What is the pathology

of miasmatic disease? About all we know of the former is, that heat, moisture and vegetable matter are the requisites for its production.

Of the latter, judging from the similarity of phenomena, it would appear to be somewhat like that produced by the presence in the system of unassimilated substances, such as mercury, lead, &c.

Whether miasm is not actually some minero-vegetable compound, passing off in the form of fumes, like those from mercury, iodine or camphor, and thus entering the system through the respiratory mucous membrane, produces its permanent poisonous effect so often witnessed, is as yet an unsolved problem. There are some points of resemblance between the conditions produced by this poisonous action and those which occasionally follow concussion. This impression of miasm once fixed upon the brain, the paroxysms of disease which indicate it, may continue to recur for long periods after, though far removed from the cause. As a brain which has suffered concussion and loss of memory, or epilepsy, or paroxysmal delirium, or mania, or change of disposition, follow occasionally for a long period of time after, so a brain which has received this poisonous impression from miasm, generally recovers by degrees, and in some cases continues to manifest the state of disease in which it has been left, by an occasional paroxysm of fever during the remainder of the life of the individual. But we do know some useful facts connected with this subject. We know for example, that its manifestations in disease are periodic, and that they are rarely experienced without having given warning of their approach, more or less in advance, by what we call premonitions. These premonitions are also generally well understood. To avoid the paroxysm guided by them, is the province of the *preventive* treatment, or the preventive use of quinine. When in the rule given for the protective treatment, it was ordered not to continue it beyond thirty days, its object was to avoid a possible insensibility on the part of the brain, to the action of this drug, and a consequent ultimate infection under most unfortunate circumstances, the sheet anchor of the treatment having become inert. But the acclimating process having been secured by this period of protection, the type of the disease whenever it may appear, will almost certainly be mild, and by suspending the medicine then, it will afford the brain ample time to recover its susceptibilities, and at the first

appearance of the premonitions, to be in the best possible condition for the preventive use of the medicine.

By this piece of strategy, though the enemy is permitted a foothold upon your territory, your forces are so recuperated and strengthened that he is completely under your control.

There is every reason for believing that the system will become more or less insensible to the action of quinine, as it is known to, to that of alcohol, opium, and other medicines of that class, when it is *continuously administered*. In miasmatic regions it is no unusual thing to see cases of this disease in which quinine is apparently inert. I have myself seen many cases of miasmatic fever whose paroxysms continued to come on regularly, notwithstanding the ears were ringing from quinine; but I do not remember to have ever seen such a case in one who had not taken much of the medicine, and more or less continuously, *immediately* before the attack. A long period of use of the quinine in my own person, has convinced me that a daily employment of it may be continued for months in succession with little effect upon the susceptibilities to its action, provided the daily impression is limited to from *eight to twelve* hours. During the period of respite thus secured, the nervous system appears to recover its tone and sensitiveness, and on the succeeding day, the dose is about as active as any of the previous ones. During the six years that I was in the very frequent use of it in my own person, I never discovered the least diminution in its activity upon me so far as the *signs* it produces were concerned, but I rarely took it many days in succession. The sanitary commission, in the report referred to, give the case of a rice plantation overseer who, though said to have protected himself for many years by the daily use of quinine, was undoubtedly one of these prevented cases. The very fact of his having been acquainted with this power of the medicine, is proof to me that he had learned it by experience, which it does not appear to me at all probable he could have done without having had fever some day, and consequently was an infected case. It is much more likely that he was in the habit of taking the quinine before going into unhealthy localities, whenever he thought of it, but his main dependence was in taking it when he felt premonitions. This kind of people are, however, liable to take frequently and excessively the medicine, with little rule, and indefinite object. Some of the most troublesome cases of fever that ever came into my

hands, were men who had followed for more or less time the promiscuous and excessive use of quinine. But as we have just seen, a single daily dose will not generally impair the susceptibilities to its action, and if one fears to trust to premonitions, I would not urgently object to this manner of employing it though he will unquestionably consume a much greater amount of the drug than he who takes it when he feels the premonitions only, and on this account is often very objectionable. The commission quotes still another case from the same author, of a railroad contractor, who fell seriously ill of remittent fever contracted on his work. He was protected during the remainder of the season by the daily use of quinine, as was supposed. Had this account terminated here, it would have been well enough, and would have shown quite enough; but it is very much weakened by his going on to state that this gentleman had left on his work one hundred and fifty negroes, who, he *feared*, would get the fever also, as they had come from an up-country place, and to prevent it, if possible, he carried back several pounds of the quinine with him when he returned after his convalescence, and began dosing them, and consequently they had no fever throughout the year.

Now we see that these same negroes had been in this miasmatic locality since before the contractor fell sick, had remained there during his absence ample time to become infected and to have suffered fever as he did had they been susceptible; but nothing is said of there having been any sickness among them, nor having shown any sign of infection. On the contrary, we are told that they were well the whole season, and that it was owing to the quinine, which they did not take any of till long after they should have had fever, were they going to suffer at all. It is pretty well known that the negro is much less susceptible to miasmatic poison than the white man. This is a general truth, with now and then an exception, and had much to do doubtless with this case.

This want of accurate information is almost a peculiarity which marks to a singular degree, nearly all of the reports upon this use of quinine, which have come to my knowledge. There seems not to have been any definite plan or theory to guide in its administration, entertained by any one who has written in its favor. The terms preventive and prophylactic, have been so promiscuously and synonymously employed, and recommendations and statements of experience so general and vague, that it is

next to impossible to determine what any one has done, and what were the real results. One of the most historic cases of this species of medical literature, is from Du Chaillu's travels in Africa. The substance of it is, that this traveler took from the day of his arrival three or four grains of quinine morning and evening, and found it a good preventive; but it would appear that it did not protect him, for a little further on he says, that during his whole stay in Africa, he took from time to time, when in perfect health, a dose of quinine as a prophylactic. So he must have had periods of being out of health. Taking all of the accounts together, it is quite impossible to say how he did take the medicines, and indeed to learn any useful thing positively by this statement; and yet it has been reproduced as a guide to those who have in charge the precious lives of our soldiers and seamen. Of all the uses of quinine, there is none into which one will fall so readily, almost unavoidably, as this preventive use. Indeed, to know the premonitions of miasmatic fever, and to understand the power of quinine to control and cure developed disease, almost as a matter of course, leads to this application of it. I have often been questioned by persons who knew nothing of quinine, except that it was used to cure fever, and that it had done so in their own cases, if it would not also "stop the fever taken when they felt it in their bones."

I was never taught this use of the medicine, but when at the end of about a month's residence in the miasm of the Isthmus, I lost my appetite, began to feel pains in my knees, and other signs which I recognized as premonitions of miasmatic fever, the first idea of treatment which suggested itself, was to take quinine, precisely as if preventing a tertian attack. I accordingly took an eight grain dose, which set my ears to ringing, and I followed it up by a five grain dose as often as its effect appeared to be passing off, for forty-eight hours. The threatening symptoms all disappeared within six hours after the first dose, and were relieved by it; the subsequent ones were taken as a precautionary measure only. This measure was the result of my knowledge of the quotidian and tertian habits of the disease, and not of almost intuition, like taking it with the premonitions. Persons without such knowledge, will need instruction as a rule, upon this point, else they may be overtaken a day or two after, by the recurrence of the paroxysm, with no time to take the medicine. Two weeks after my first signs of infection, the same premonitions reap

peared. I determined to take smaller doses, and depend upon repeating them. I took a five grain dose, and not feeling relief, repeated it in two hours. An hour after the second dose, my ears began to ring, but in every other respect I was well. At the first quotidian period and the second also, I took five grains as a matter of precaution, not feeling any signs of disease. This experience lead me to omit these precautionary doses in my own case, and I soon began to adopt it in a large number of cases, depending entirely upon the premonitions, as indications, and to suspend it at once they disappeared. This general plan I followed throughout my residence in the tropics, having on some occasions to increase the quantity largely, and again less was sufficient. On one occasion, during the rainy and sickly months, at a period of the year when vitality in those regions is reduced to its minimum, I felt the usual premonitions and took a five grain dose, but as the time for the second dose approached, all of the symptoms were becoming more severe, and I accordingly within two hours from the first, took a ten grain dose. I found it necessary to take three such doses in the course of nine hours to get relief, which was finally perfect, but thirty-five grains were taken within eleven hours from the first appearance of the premonitions, to accomplish what ten grains had always done before, and five grains had frequently accomplished. These recurrences of premonitions, were sometimes as often as once a week, and on other occasions months would pass without a sign of them. In this manner, I prevented any development of fever for four years, and with such perfect results that I really began to suspect that I might have been deceiving myself, and that what had been regarded all of this time as premonitions of miasmatic disease, might after all, be something else.

Accordingly, I determined to settle the doubt, by taking no more quinine for them. The result, as it appeared to me, was that at the end of about twenty hours, the same premonitions so often suffered, matured into the cold stage, of what turned out to be, a mild, but regular paroxysm of intermittent. I had the satisfaction, therefore, if not the pleasure of suffering my first ague and fever. I was no longer curious, and never again allowed my premonitions to go on unattended too. The plan then was, to depend upon the premonitions as guides to the administration of the medicine, and to arrest them by the smallest amount compatible with safety. As a rule, this can be accomplished by a

five grain dose once in two hours till relief is felt, but if symptoms increase under this amount, double it, as we have seen I was obliged to, in my own case. Among those persons, who, as superintendents, mechanics, &c., have duties which require them to be out of doors, and much exposed during the whole day, a ten grain dose, is a much safer amount than two of five grains, at such interval, and frequently much more convenient. Therefore, a person of this class who begins the day with creeping premonitions, will almost invariably get through the day all right, if he take a ten grain dose before starting in the morning, but if he take only five, and carry along another to take later, he may come back to you during the day with fever. Persons in doors, and where they can be under constant observation, can usually be treated with much smaller doses. But it is unsafe, and of course unadvisable, to allow the out-door class of persons above-mentioned, to depend too entirely upon their early premonitions. They should never be allowed to go away for a day, without a dose in their pockets, and it is generally well to give them a dose on the two days following the one on which they suffered the premonitions. They are easily instructed to look out for the premonitions, and it should be the invariable rule of the physician to so instruct them. In accordance with this plan, I have often put into the mouths of men who were working in the midst of tropical swamps, a ten grain dose, because they told me as I was passing, that they felt certain pains and signs, which I considered premonitions of fever, and I have had the satisfaction of seeing them come home at night, hungry and healthy.

But what is to be done, in those occasional cases wherein there are no premonitions, or if there are any, they are so immediately followed by the paroxysm, that no time is given for the action of the quinine. I know of no guide in such cases so valuable, as the one afforded by the well known habit of miasmatic disease, of recurring at seven day periods, or some period of which seven is a multiple.

A full dose of quinine on the seventh and eighth days, will generally carry such persons along for months without fever.

Much has been said and written of late upon the subject of the *daily* use of quinine after infection, for the purpose of avoiding paroxysms, but all that I have witnessed of this disease, and of the action of this drug, has thoroughly convinced me that there is neither safety, necessity or economy in the plan. It is easy to

show by means of data in my possession, and the evidence published, that the amount of quinine required to carry a person through one year's exposure, after his infection, by this daily dosing, would be at least *double* that needed in treating the premonitions only. This opinion is corroborated by all my former colleagues whom I have consulted.

The rule then is, after the subject becomes infected, never give him quinine without he has premonitions of an approaching paroxysm. Arrest them promptly by full doses—not generally less than five grains—repeated once in two hours, so long as indicated, taking care to make them large enough to accomplish the object. The first and second quotidian periods after, should be passed under the influence of the medicine, by all persons much exposed, and away from the immediate supervision of the physician. It can hardly be forgotten by any one, that where a very prompt action is required, it should be given in solution.

3. *Curative.*

But little can be said of quinine as a curative, which will interest the profession, but as these remarks may reach those who are commencing the duties once before me, I think it well to say a few words. There is little question I believe, that this medicine is a stimulant, but there is reason for believing that this property of it is not generally manifest. In my experience with it, I am not at all certain that I have ever witnessed any such effect, in cases which had not miasmatic complications. I have often seen patients in a typhoid condition from miasmatic fever, rapidly sinking under the effect of brandy and diffusible stimulants, changed in the most incredible manner for the better, by a full dose of this medicine. The experience of those who have advocated it in typhus, typhoid and yellow fevers, has not so far as I know, come up to their expectations. Its province then would seem to be in miasmatic disease, and it certainly behaves as much like a specific in it, as does iodide of potash in syphilitic periostitis. It seems well settled then, that quinine is a stimulant, with regard to miasmatic disease, and my experience with it has fully satisfied me that it is of service given at any period of an attack of miasmatic fever. I have seen it act in a prompt and happy manner in the cold collapsed condition of malignant, and in the burning apoplectic condition of the more violent remittent fevers, and as before stated, in the typhoid

conditions of these diseases. Its action as a stimulant is sometimes very disagreeable and even dangerous. To illustrate. An intellectual and active gentleman had suffered an intermittent some ten days, which had almost become continued from exhausted vitality. He at once stated that he wished to be treated without quinine, as he was unable to stand its action. Whenever he took it his skin became hot, his head began to ache, his pulse grew violent, he was more or less delirious, and altogether, his symptoms became alarming. I prevailed upon him to allow me to do the thinking, and to take quinine. He was put upon ten grain doses of the medicine, in solution, sufficiently frequent to keep up the influence. I never saw more happy effects. He was at once relieved of his febrile symptoms, and made a rapid recovery. The doses which he had taken with such unhappy results, were two grains once in two hours, and apparently had stimulated the brain just sufficient to maintain the struggle, while the ten grains at once decided the contest. I have no doubt that much more injury has been done by giving this medicine in too small doses, than in too large ones. But when a person after complaining for more or less time of premonitions of fever, suddenly falls, as if seized with apoplexy, insensible and almost lifeless, and you find him with cool skin, dilated pupils, slow, quiet respiration, pulse small and frequent, unable to swallow without strangling, involuntary stools perhaps, and all these appear to increase, as the moments pass, and he is evidently sinking, it may seem almost useless to attempt any remedial measure, but I have seen just such cases, in all probability saved from destruction, by a few grains of quinine introduced into the rectum in solution.

These are said to be not infrequent cases in armies marching or drilling, in miasmatic tropical regions. I have had the fortune not to see many of these cases. The early ones died, as I believe, because I did not know what to do for them; the later ones were saved, I have little doubt, by the use of the quinine as above mentioned. Quinine, unless introduced in solution, must be to a very considerable extent lost, when used by the rectum, from well known physiological reasons. There will rarely be any discomfort produced by the introduction of a warm solution in water, of the strength of five grains to the ounce, and to render it less likely still, a little morphia may be added to it; which by the way, is often a valuable adjuvant to the quinine. As a rule, a greater amount than ten grains introduced

in this manner, will rarely be required. I have seen one such dose produce a most remarkable and prompt reaction, and restore reason and sensibility. It is absorbed with rapidity, so much so, that a dose of this size may be given once in half an hour or three-quarters. But another case presents, with a parched and burning skin, a tumultuous action of the heart, the carotids beating furiously, the pupils fixed, the respiration labored, sometimes slightly stertorous, the face livid and swollen, and sometimes subsaltus tendinum. One begins to think of his lancet before such an array of symptoms, but when he feels of the pulse, he will discover that in all of the tumult, it is weak. A little enquiry will show that the patient had complained of feeling unwell, more or less time, had suffered the various pains and aches so characteristic of miasmatic poisoning, and perhaps that he had suffered a chill of more or less severity, and that this heat had come on, with all of its attending symptoms after. Almost invariably, he will also be found to have resided in the locality for only a few weeks, and to have been exposed not only to miasmatic, but to heat and fatigue, and other causes of prostration and disease. It is indeed a case of severe first miasmatic disease of warm climates. In this condition of the vital forces, it is necessary to know the peculiar power of quinine as a stimulant, in order to be persuaded of the propriety of administering it. I have never seen anything in the use of quinine more satisfactory than the prompt manner it will act in just such cases as this, in quieting the circulation, hurrying on perspiration, and restoring the reason. In these cases, the mode of administration by the rectum is generally requisite. Where one paroxysm of fever is likely to be overtaken by the second, the quinine to meet it, and the possibility of some anticipation, should be given within twelve or eighteen hours, whether the skin be moist or dry and parched. A ten grain dose of the medicine under such circumstances, is often worth all of the sudorifics of the *materia medica* to bring on perspiration in an obstinate remittent or continued miasmatic fever.

In conclusion, I would offer the following summary of deductions:

First—When men are to be sent into miasmatic localities, either from ships or from land forces, a dose of quinine sufficiently large to produce some appreciable evidence of its action, should be taken by every one before entering such locality, and should be repeated once in twelve, and in some cases once in eight hours

(which it will be the physician's duty to ascertain and prepare for) during the time spent there.

Second—That removal from a miasmatic atmosphere for any twelve hours, and especially during a night, is quite equivalent as a protective, to one dose of quinine; it may be much more economical, and when practicable, is by far the most desirable protective measure.

Third—That in all cases where this measure can be daily practiced, it will unquestionably preserve the susceptibilities of the brain to the action of the medicine, for an indefinite and probably long period, and will thus serve indirectly as a most efficient protective.

Fourth—That officers and chiefs in command, should by all means avail themselves of the advantages to be derived from such intermissions in exposure, and thereby maintain their susceptibility to the quinine more or less unimpaired. By so doing, the loss of their important services would be rendered much less liable, and the consequent embarrassment to operations would almost surely be avoided.

Fifth—That when continuous exposure is inevitable, there is no safety in attempting to protect from infection by the use of quinine, for a longer time than two months, and as a general rule, it is not advisable for longer than one month.

Sixth—That ceasing its administration at this period, by the time the infection takes place, and the premonitions appear, the susceptibilities to the medicine will have become so restored that it will be practicable generally, to prevent the paroxysms for long periods of time.

Seventh—That as quinine is a stimulant, with specific action in all conditions of depression or exhaustion from miasmatic poison and miasmatic disease, it is indicated in all cases, irrespective of the state of the skin, when the unaided powers of life are likely to be unable to restore to healthy action within the time required to avoid a renewed attack, and also when there may be danger that the vital forces will be overwhelmed by the poison in the onset of the disease, and that when so indicated, it should be promptly and efficiently employed, either by the stomach or rectum, as the case may demand.

Eighth—That by an observance of these rules, and by avoiding the causes of other diseases, most men of even ordinary constitutions, can be kept in miasmatic localities for years, in an efficient state of health.

Article 5. Paralysis—A Sequela of Diphtheria. (Reflex Paralysis). By D. P. BISSELL, M. D., of Utica.

During the past season several severe and fatal cases of paralysis occurred under my observation, in children who had apparently passed safely through attacks of diphtheria. The commencement and progress of the paralytic attacks was similar in all the cases witnessed, which would seem to indicate a common cause; and as all the cases had been but recently preceded by diphtheria, it may be safe to infer that the cause of the paralysis, whatever it may have been, was connected with or resulted from the preceding disease. But what little I may have to say in relation to the etiology and pathology of the cases hereinafter described, will be reserved for a subsequent part of this paper.

Seven cases of palsy occurring after attacks of diphtheria, came under my care between the first of July and the middle of September last, (1861). Of these, five terminated fatally, one recovered, and the remaining one, after a lapse of six months, still suffers from general paralysis in a very marked degree.

Of the five fatal cases two were attacked within eighteen days, two within twenty-five days, and one in thirty days after recovering from diphtheria. None of these patients lived longer than fifteen days after the first symptoms of impaired innervation manifested themselves; three of them died within from six to ten days. The cases in which palsy supervened in eighteen days, were a boy and a girl about three years old. One of those attacked in twenty-five days, was a girl of about the same age, and the other a boy of ten. The one attacked after a lapse of thirty days, was a boy between six and seven years old. The one that recovered was also a boy $3\frac{1}{2}$ years old. This one was attacked during convalescence and before he had been carried out of the house. In this case, nearly all the motor muscles of the body were simultaneously affected. All the flexors, extensors and sectimuscles, were totally paralyzed. He could neither move nor speak, and he swallowed with great difficulty. The loss of

power in the muscles continued about thirty days, when the little fellow began to articulate, and the muscles of the back, neck, &c., to regain their power; soon after those of the limbs would obey the will. During all this time, a period of nearly six weeks, he slept well, his appetite was good, tongue clean, bowels regular, and all the secretions and excretions appeared normal. No albumen could be detected in the urine, nor was its specific gravity, at any time when examined, above the normal standard. His pulse was always small, soft, and very rapid, and the surface cooler and paler than natural. This child's recovery was rapid and complete, and he is now, after a period of more than six months, in good health and is enjoying the use of all his muscles. The boy still suffering from palsy, is about four years old, was healthy and strong for one of his age when attacked with diphtheria, which was mild and of short duration. Both the local and constitutional effects were less than usual, and his recovery seemed perfect. In three or four weeks he was observed to walk awkwardly and sometimes to stagger about the house. Soon after his head began to fall forward and to swing about like an intoxicated person's, showing that he had but little if any control over its movements. Within a week from this time he had lost all power of locomotion, and in a great degree the use of his arms and hands. He swallowed without difficulty, and his voice and tongue were not affected.

A sister of this boy aged six years, died of diphtheria a few days before he was attacked with that disease. This girl was sick only about 29 or 30 hours, and her attack seemed to her parents so mild and free from danger that they did not seek medical aid until about three hours before she died. She suffered but little pain, and there was only a moderate degree of inflammation in the throat. The diphtheritic deposit was in small white patches, which were confined to the tonsils. Her breath was not offensive, her mind was clear and cheerful, and she readily took whatever was offered her. To the casual observer, she did not seem to be dangerously ill, but to the discriminating mind her approaching end could then be read in the pulse and respiration. The former counted only 38, and the latter 14 in a minute, when I saw her about three hours before death; the action of the heart was as suddenly arrested as if the par-vagus had been divided and probably as perfectly paralyzed.

There was a remarkable degree of similarity or coincidence in

all these cases, not only in the commencement of these attacks but also in the symptoms, progress and termination of the disease, except in respect to the frequency of the pulse and of the respiration.

All these patients, with a single exception, had nearly or quite recovered their usual health when attacked with paralysis. The first symptoms which attracted attention were an unsteadiness or staggering and drawing of the limbs after them when attempting to walk, with some formication and tenderness in the muscles of the thighs, legs, &c., and there was a greater loss of power and co-ordination than of sensibility in the parts affected. Usually the muscles of the neck, arms and hands would become enfeebled, and soon after, in some of the cases, those of the pharynx and tongue were more or less involved in the disease. In two instances portions of the fluids which the little patients attempted to swallow were returned through the nose, while solid substances were more readily swallowed. Vomiting occurred in a few cases near the close of the disease. The pulse (by which we mainly form our prognosis), was in all the cases soft, feeble, and easily computed; in most of them it was slow, or rather infrequent, sometimes not more than thirty beats in a minute; while in two or three instances it was extremely quick and feeble so that it could scarcely be counted. The whole surface of the body was paler and somewhat cooler than natural, and the muscles everywhere had a doughy or inelastic feel, but were not atrophied to any considerable extent: And yet with all this impaired innervation and feeble action of the heart and arteries, the appetite remained good, digestion was perfectly performed, the bowels regular, the alvine discharges normal, the urine natural in quantity and healthy in appearance. In three cases in which it was tested no albumen could be detected, nor was there any increase in its specific gravity; in the remaining four cases no tests were applied. The normal condition of the kidneys and of their products, together with the whole train of symptoms attending these cases, precludes the idea that the disordered innervation was, in any degree, the result of uræmic poisoning. Such at least is the view which I entertain. In none of the cases was there any fever or thirst. There was no pain in the head nor tenderness in the spine, nor any apparent lesion of the cerebro-spinal organs. The mind was always clear and generally cheerful, and the sleep quiet and natural. There was no coma. The respiration was

coincident with the pulse; when the latter was slow the breathing would be slow also, and when the pulse was rapid the respiration would be increased in frequency in a corresponding degree. The impaired action of the heart and lungs was evidently the result of disordered innervation, and not the consequence of organic lesion in these organs.

The manner in which death took place in most of these cases is worthy of note. It usually occurred suddenly and without those unmistakable symptoms which in most other cases precede that event. It resembled syncope rather than death, and generally occurred at a time when neither the patient nor his friends were apprehending any immediate danger. The action of the heart would be suddenly arrested. Some time when the little patient was sitting up talking with those around him, or amusing himself with his toys, life became extinct without distorting a muscle or occasioning a groan. The exclamation was frequently made in my hearing by those around the death-bed, "How easily he died!" Paralysis of the heart was probably the cause of death.

The importance of presenting so minute and particular detail of the symptoms will be apparent if we bear in mind the fact, that it is only from a careful study and analysis of them that we can learn or approximate to the real nature of the disease. In private practice *post-mortem* examinations by dissections are almost always denied us, and especially so in cases of children. We are, therefore, deprived of the light which autopsies would afford us in our attempts to ascertain the etiology and pathology of the cases before us. But by comparing the symptoms with each other, and with those which belong to other similar disorders in which the etiology and pathology is well established, we perhaps may be able to form a pretty correct idea of the nature of this particular form of derangement.

Paralysis generally, except in cases where the loss of power is confined to a single, or at most to a small number of muscles, (local palsies,) results either from lesions of the cerebro-spinal centre and its meninges, or is produced by reflex action from the cerebro-spinal organs. It is important accurately to distinguish between these two classes of palsies, as the treatment adopted to them must be essentially different, in as much as the loss of power in the one case is the result of disease or injury to the brain or spinal cord, while in the other it is occasioned by morbid in-

fluences or impressions thrown upon these organs by some "outside excitations." Inflammation and its consequences are to be combatted in the first class, but loss of power and vital force must be restored in the other. It is clear therefore that the treatment which would benefit cases of reflex paralysis like those which I have imperfectly described would prove injurious in palsies resulting from disease of the brain and spinal cord, and *vica versa*.

Now if we compare the symptoms and the course of the disease in the cases presented with those usually found in palsies resulting from diseases of the spinal cord, &c., we shall see that except in the loss of power, which is common to both forms, they differ materially in nearly all their essential characteristics. The pain and other disturbances in the head, the pain and tenderness in the spine, the cramps and convulsions in the muscles, the loss of power in the bladder, rectum, &c., are among the usual symptoms of paralysis from diseased spinal cord. Not one of these symptoms, however, was present in any of the cases before us. Are we not warranted in the conclusion then, that these cases of diphtheritic paralysis were not produced by lesions of the brain and spinal cord, but were the effects of reflex action from these organs?

Dr. Brown-Sequard, in a small work recently published, containing his lectures delivered in Edinburgh, Glasgow and Dublin, on the subject of *reflex paraplegia* has I think most clearly proved that palsy is sometimes the result of reflex action, but as this work is very generally read by the profession, I will not stop to quote the proof by which the fact is so clearly established, but will content myself by repeating one of his general remarks on this point. "A reflex paraplegia is almost sufficiently characterized by the absence of the special symptoms of an organic disease of the spine, or its contents, and the existence of an incomplete paralysis of the lower limbs that has appeared somewhat slowly after a disease of the urinary or genital organs, or of some other abdominal viscus; after an inflammation of the lungs or pleuræ, or after some kind of irritation of a nerve in its trunk or cutaneous ramification. In a great many cases of reflex paraplegia, we shall find nothing else upon which to ground our diagnosis."

It may be objected that the cases described by me did not assume the paraplegia form, and therefore the facts and arguments

adduced by Dr. Brown-Sequard to prove the existence of reflex paraplegia do not apply to cases of general paralysis like those under consideration. It may be sufficient to answer that these cases resemble those described by Dr. B., in very many particulars, the difference being mainly in *the extent of the loss of power* and the consequent severity of the disease. While on the other hand they present but a single feature (loss of power) of palsies resulting from disease or injury of the brain or spinal cord. Hence the conclusion that they were produced by reflex action from these parts.

The obscurity and uncertainty which pertain to the pathology of this special form of paralysis, apply also to the *cause* of the disease. Not unfrequently etiology and pathology stand in relation to each other as cause and effect, but sometimes the *effect* of one disease becomes the *cause* of another, and that too widely different from the primary malady.

Why palsy should be produced by diphtheria, and no such affection follow either scarlatina, measles, erysipelas or croup, remains to be determined. Such, however, I believe to be the fact. Most of these diseases affect mainly the same class of persons, (children) and have many symptoms in common. Indeed some well-informed physicians at the present time, contend that diphtheria is in reality nothing but a "modified form of scarlet fever," or a "malignant type of erysipelas."

During the prevalence of diphtheria in Utica, scarlatina has at all times been present, and measles in a wide-spread epidemic form has coexisted with them both; yet I do not know of a single case of paralysis in any form following either of the two last named diseases. Each it would seem produces changes in the system, or in certain parts of it, peculiar to itself, and therefore is followed (when at all) by its special form of lesion.

Dr. Jenner of London, in his clinical lectures on diphtheria says, "in a certain proportion of cases, after the termination of diphtheria, symptoms of a very remarkable kind occur, referable to deranged innervation." There can be no doubt "he says, that the latter are the consequence of the former—that the patient would not be suffering from nervous symptoms if he had not just had diphtheria."

Our knowledge of the cause and pathology of the impaired innervation in diphtheritic paralysis is very limited indeed. But few medical writers so far as I can learn have at all noticed this

special form of disease. Drs. Jenner, Greenhow, Mingault and Reynolds,* are the only ones who have given us any account of it, or if there be others who have described it, I have not been able to find them.

Dr. Greenhow mentions several nervous disorders as sequelæ of diphtheria; such as partial paralysis of the muscles of deglutition, and of the voice, paraplegia, hemiplegia, &c., but he says, "the several forms of nervous disease which follow diphtheria usually disappear with time, but the cure is often promoted by change of air, good nourishment, and the use of tonics." The cases which he described evidently were not of that grave character which belong to those I witnessed.

In the "NEW SYDENHAM SOCIETY'S YEAR BOOK OF MEDICINE AND SURGERY," published in 1861, at page 158, notice is taken of a paper by Mingault on diphtheritic paralysis. Also, in the same volume, at page 171, a paper by Reynolds on the same subject is noticed. The description given by these writers of the disease corresponds in some respects with our own, while in others there is considerable difference.

Dr. Reynolds says, "there is a certain general course through which the paralysis runs from that but slightly marked, up to that which results in death. It *always begins in the soft palate* either by numbness, loss of power of one half, or of the whole curtain; next amaurosis or strabismus, if the eyes are at all affected, always follows after paralysis of the palate, and before the extremities become involved. Deafness may follow amaurosis, then the lower limbs become affected next the upper extremities, then the muscles of the alimentary canal and bladder, the respiratory muscles and in some *very rare cases*, the muscles of the heart.

Dr. R. says, "the prognosis is favorable," and but few die. "The treatment is to be invigorating. Sulphur baths, galvanism, friction to the spine, and strychnine, have all been found useful."

Dr. Jenner, however, seemed more fully to comprehend the serious nature of the disease, than either of the other authors named, and he has recorded several cases which very closely resemble, both in the manner of attack and in their termination, those that came under my care. I will cite a case or two from Dr. J.'s lectures, to which I have already referred, to show how

* Drs. Rankin, Eade, Ransome, and perhaps some others have merely noticed nervous derangements after diphtheria.

perfectly his cases correspond in almost every particular with those which I have described.

First case.—“Miss A., aged twelve years, the oldest of the same family, sickened from diphtheria, on the 8th of February, while with her brother in the country. She was considered to be convalescent on the 22d, and returned to London, March 7th. At this date her parents thought her quite well, she gradually fell into the state in which I saw her on the 17th of March; at that time looked in tolerable health; there was no emaciation, and only a moderate pallor of the skin and mucous membranes.

To walk, however, a step she required the aid of two persons. She had very little power in her lower extremities, and still less control over their movements. There was some loss of power in the hands and arms, so that she could not cut her food.”

“Solids were swallowed without difficulty, but fluids frequently returned through the nose. It was manifest that she exercised very little control over the muscles of the pharynx. Her mind was perfect, her tongue clean, her appetite good; she was taking most nourishing diet; there seemed to be no derangement of the digestive organs.”

“I saw her again on the 23d, there was no improvement; and Mr. Adams informs me that she became more and more powerless, and died shortly after her visit to me on the 23d.

Second case.—“Master S., aged one year and ten months, began to suffer from diphtheria on August 16th, 1860, (his brother having died shortly before, of the same disease.) In three weeks the child had recovered, ran about, resumed its usual habits, and seemed well. On the 16th of September, his mother noticed that he staggered in walking—paralysis gradually increased, until he was in the state I saw him with Mr. S. on September the 26th.” I then noted, “He is very pale, anæmic looking, thin, muscles small and flabby, but he is not emaciated to any extreme degree. He is intelligent, and eats and sleeps well; there is no evidence of paralysis of any of the muscles of the face, tongue or eyes. When in his mother’s arms, his head falls on one side—backwards or forwards, according to the position in which he is accidentally placed. When he sits, there is posterior and lateral curvature of the spine, &c.; the arms can be moved at pleasure, though their movements are performed slowly and languidly; the legs are almost powerless; he is quite unable to stand, but when sitting in a chair, &c., he can move his legs a little. His voice is weak,

the respiratory movements are performed feebly; he swallows without difficulty; fluids do not return through his nose; his pulse is weak, seventy-eight in the minute; there are no evidences of rickets, albuminoid disease or tubercle." He grew weaker each day, and while sitting propped up in his chair, taking some nourishment, he suddenly fell back, apparently in a fainting condition, and died. He lived thirteen days only from the super-vention of the first noted symptom of deranged innervation.

I will here remark in justice to myself, that at the time my cases of palsy occurred, and the notes of them were made which constitute the substance of this paper, I had not seen either Dr. Jenner's lecture on diphtheria, or Dr. Brown-Sequard's work on reflex paraplegia; and furthermore, that I had made a verbal report of *my cases* to the Utica Medical Club before I saw either of works named, taking then substantially the same view of the disease in all its aspects as now. But after examining the works of the distinguished medical gentlemen named, I reviewed my notes, and availed myself of such facts and arguments furnished me by those high authorities, as would strengthen the position assumed in my own views of the disease. And I make my acknowledgments to these authors for the liberties which I have taken with their writings, and the aid they have afforded in investigating the somewhat anomalous cases under consideration.

The following is an abstract of a case kindly furnished me by my friend Dr. Cleaveland, of the Utica Lunatic Asylum.

"Elizabeth V., aged nineteen, of strong constitution, an attendant in the Asylum, had a mild attack of diphtheria early in May last (1861.) By the middle of the month, seeming to be convalescent, she obtained leave of absence for a week. While away she was twice attacked with vomiting, and about the same time noticed an alteration in her voice. Soon after returning to the Asylum, she complained of vertigo, impaired vision, and at times regurgitation of liquids through the nostrils. At a latter period she had headache, impairment of vision, and a feeling of fatigue, uneasiness, and loss of power in all the extremities. These symptoms augmenting in force, and interfering more or less with the performance of her duties, she applied for advice on the 1st of September."

"At this time, her articulation had improved, but deglutition was still difficult. She now complained of weakness in her arms and hands. The slow and somewhat staggering gait indicated

diminished muscular and co-ordinating power in the lower extremities. Both extremities were subject to alternating flashes of heat and cold, formication and prickling sensations, and in the lower limbs there was decided anæsthesia. There was some tenderness in the spine on pressure ; her general appearance was that of health ; she had a good appetite, regular and healthy evacuations from bowels and bladder, and she menstruated at the proper periods."

The treatment was as follows :

"Strychnine, beginning with the twentieth of a grain and gradually increasing the dose until slight constitutional effects were produced ; a Belladonna plaster to the spine ; a horizontal position on the back, with head and extremities elevated during portions of the day, and the same posture observed at night, and the entire avoidance of all fatigue. Under this treatment, with the aid of good nourishment and stimulants, her condition improved rapidly for several weeks, but having imprudently taken a long walk, an aggravation of all symptoms ensued, and soon after she left the Asylum."

During November and December she took the pyrophosphate of iron, with such benefit, that by the 1st of January (1862), she was entirely free from paralytic symptoms, with the exception of the impediment in her speech. She is not however as strong as formerly, and after exercise, experiences a considerable degree of lassitude.

I saw this patient twice with Dr. Cleaveland during the attack, and concurred in the treatment adopted.

The following case came under notice quite recently. I append it with the single remark, that the loss of power involved a greater number of muscles, and to a greater extent, than I have witnessed in any other case.

I was called on 19th of January (1862), to visit with Dr. H., of Utica, Mr. S. F., a carpenter, aged twenty-six, and received from Dr. H. and the patient himself, the following statements, which I noted at the time : "This man had an attack of measles in October, 1861, from which he recovered and resumed his work in about three weeks ; was attacked with diphtheria on the 1st of December following, which was very severe. The inflammation of the tonsils, throat, &c., greater than usual, with much spongy deposite ; the breath offensive, and subsequently extensive destruction of the soft parts. After two weeks he began to mend

and soon after was able to go out, but did not fully regain his health. About three weeks later, his lower limbs began to swell, and his eyes, tongue and voice became slightly affected. In another week the whole of the motor muscles began to suffer, and the loss of power in them continued to increase until he got into his present condition."

When I visited him he was sitting listlessly in a chair with his head fallen forward and with but little control over any of his muscles; his eyes were partly closed, and he could not see to read; his voice weak, he swallowed with difficulty; fluids sometimes returned by the nose; he could not cut his food; the pulse feeble, somewhat irregular, and beating 64 times a minute; the respiratory action weak and slow, surface cool and pale. He had no pain, his appetite was good, bowels regular, and urine tolerably healthy. It contained no albumine, but its specific gravity was a little increased; his sleep was quiet and his mental faculties unimpaired.

He had been under treatment for the paralysis fourteen days when I first saw him. Blisters and other revulsives had been used and some other active remedies employed.

The treatment after my visit to him, was as follows: Rest on the back, with the head, arms and legs well elevated; friction with the hand to the spine and limbs, often repeated, and warm flannels to the whole surface; good nourishment, consisting chiefly of animal food, and stimulants were allowed, and strychnine, quinine, and the phosphate of iron given.

I saw this patient afterwards on the 21st, 23d, 25th and 30th of January; the treatment had been continued, and there was some improvement in his condition, especially in his eyes and the muscles which support the head, and also in those of the extremities. He is now taking the pyrophosphate of iron.*

It will be observed that the two cases last described, occurred in adults, and that the symptoms attending them differ somewhat from those which were present in the former cases. There is, however, a tolerably close resemblance in the symptoms of these

* For the following case, I am indebted to Dr. Colvin, who kindly furnished it to me after the reading of my paper before the Society. I take the liberty of adding it as a note. It is briefly but clearly set forth in these words: "A child five years of age, had diphtheria; was discharged as cured after eight days. Sixteen days after its dismissal there supervened a gradual loss of the use of the muscles of the extremities until it was unable to set up or feed itself; fluid often returned through the nostrils, and there was paralysis of the muscles of the palate, pharynx, &c."

"Treatment—strychnine, quinine, iron, friction, &c. It died suddenly in attempting to drink."

two. The nervous derangement in both of them came on more gradually than in the former cases and involved a larger number of muscles, while the action of the heart and of respiration was less affected, and there was also less tendency to death. The disordered innervation came on more gradually in the case of Dr. Cleaveland's patient than in the one last described, and the stomach, head and spine, were a little affected; still, in other respects, there is no essential difference in the symptoms of the two cases.

Of the exciting cause of impaired innervation in attacks of palsy after diphtheria, we have no certain knowledge; the fact that such a disease exists, however, is presented to us in an appalling manner. But I shall not attempt at this time to show how the effects are produced, nor when produced, in what manner they operate on the cerebro spinal centre to excite reflex action, as this would involve the necessity of an examination into the physiology and pathology of the whole nervous system, which is foreign to my present purposes.

Whether the cause of the disease consists of a poison circulating in the blood and producing its effects on the periphery of the sentient nerves, or whether it is to be found in the contraction of the minute blood vessels by means of which the supply of blood in them is diminished, thereby impairing the nutrition of the nerves; or whether some other pathological change not at present understood, is the exciting cause of the paralysis, we may not be able positively to determine. Additional facts and more extended and accurate observations are necessary to that end.

That *impaired nutrition in the periphery of these nerves*, either from impure blood or a diminished supply of that fluid, is the exciting cause, the outside excitation of Dr. Brown-Sequard, is more than probable: and the morbid impression cast upon the cerebro spinal axis, though a reflex action, manifests itself in a partial or general paralysis according to the locality or point from which such reflex action proceeds. The higher the point of reflection, the more general will be the consequent paralysis.

It is a matter of regret that we know so little of the real nature of diphtheritic paralysis. As before stated, Drs. Jenner, Greenhow, Mingault and Reynolds,* are the only medical writers to me known, who have noticed this special form of disease, and none of these writers have thrown much light on the etiology or

* See note on page 209.

pathology of the nervous derangement which they have described. Certain it is, the literature on the subject is limited and deficient. Hence we are in a great measure compelled to grope our way in the dark, unaided by the light which in most other cases we can derive from previous explorers in the same field of enquiry.

There are several points of special interest in the cases before us which deserve more consideration than I am able to bestow upon them at this time. Some of these are, 1st. Why effects so far removed from the primary affection should be produced by diphtheria and not by other similar diseases? 2d. What changes are produced in the blood, its vessels, or in the sentient nerves by diphtheria, which excites such a formidable disease? 3d. What is the rational mode of treatment?

Of the first and second points presented I have but a few words to offer; the treatment will receive a little more attention.

1st. Diphtheria is a special disease, characterized by anatomical, physiological and pathological changes peculiar to itself, affecting the blood, the blood vessels or the nerves, in such a manner and to such an extent as to affect the cerebro spinal centre, and produce in it a reflex action, which is the immediate cause of the paralysis. It is an established fact that scarlatina is often succeeded by albuminuria, dropsy, rheumatism, &c., and that these derangements are the sequelæ of that disease. Probably new facts and observations will yet show the true relation between diphtheria and its sequelæ, reflex paralysis.

2d. What these changes are which give rise to such action in the brain, &c., producing palsy, is not certainly known; nor whether they take place in the larger or smaller blood-vessels, in the trunk, or in the periphery of the nerves.

Brown-Sequard, in his work before referred to, very satisfactorily shows that the pathological changes which excite reflex action, take place in the latter, and that "impaired nutrition" is the cause of the altered condition of the nerves. The facts and arguments by which this eminent pathologist sustains these positions, apply with equal force to the form of paralysis under consideration. I therefore take the liberty to refer again to that most valuable work instead of quoting his facts.

3d. In a practicable point of view, the treatment constitutes the most difficult as well as the most important part of our subject; but if we adopt the ideas expressed in relation to the cause of the nervous derangement, then the true indication, and a cor-

responding plan of treatment will be readily suggested. The indications to be fulfilled are "to increase the amount of blood in the spinal cord and augment the vital properties of this centre," and also to "render the blood richer in nutritive principles."

Before proceeding to state the treatment adopted in my cases, or to recommend any plan for similar ones, I will remark, that when called to the first case which occurred, I was embarrassed with doubts in relation to the *nature* of the nervous derangement. The case was to me entirely new, and I was more than usually non-plussed in view of it. The loss of power in the muscles had shown itself about four days before I saw it, and was steadily and rapidly increasing. I prescribed nourishing food, stimulants and friction to the back and limbs, with rest and the application of warm flannels, and promised to take the case under consideration and call again the next day. But to my surprise, when I did call according to promise, I found that my little patient had suddenly and unexpectedly fallen back in his bed and expired an hour before.

The next case which happened a few days after this one, began and ended much in the same manner. This boy had to all appearance entirely recovered from his diphtheria; had been cheerfully and actively at his play for nearly three weeks when the disordered innervation came upon him, but in six days from that time, and but two days after I first saw him, he suddenly fell back as if he had fainted and died, while his mother was holding him up to feed him. At this time no one was expecting such a sad result. The treatment was the same as in the other cases, with the addition of quinine.

The third case which occurred a few weeks later began to excite increased interest as well as alarm, and as the fatal result was delayed eight days after I saw it, it afforded time for a more thorough and systematic attempt to relieve it. But as the treatment of all the subsequent cases was substantially the same as that adopted in this, to avoid repetition, I will briefly state the plan which was employed in all the remaining cases. It was: Rest in a horizontal position, friction with the naked hand to the spine and limbs, warm flannels to the whole surface of the body, avoiding excitements, the free use of substantial and nourishing food and of stimulants, and in administering strychnine, the phosphate of iron, quinine, and other tonics.

Galvanism was applied a few times in two cases, but it seemed to do no good at least; possibly it did harm. It was abandoned. Exercise in the open air was tried, but the fatigue and excitement of riding increased the loss of power in the muscles, and my patients were evidently injured by it. In fact all kinds of exertion on the part of the patients seemed to increase the disease and hasten the fatal result.

In reviewing these cases in all their aspects, and bestowing upon them the most careful attention, I have been led to the following conclusions in relation to the treatment of similar ones:

1st. That rest as perfect as is practicable, on the back, with the head, arms and legs well elevated to favor the descent or "gravitation of blood to the spinal cord," friction to the spine and limbs whenever it can be applied without occasioning exhaustion or fatigue, the external application of a warm solution of the sulphuret of potash to the surface, to increase the action of the dermoid tissues and of the capillary vessels, and wrapping the body in warm flannels, not only become valuable auxiliaries to, but constitute an important part of our plan of cure.

2d. That strychnine, repeatedly given in small doses, so as to avoid constitutional effects (the fortieth or thirtieth of a grain five or six times a day), is the remedy most entitled to confidence. I believe it is a pretty generally acknowledged fact that this alkaloid possesses the property of increasing the amount of blood in the spinal cord, and of acting in a direct manner on its tissues, thereby augmenting its action, as well as the action of all the nerves which emanate from it. Such an effect most certainly would *tend to increase* the nutrition of these nerves and restore their normal powers.

3d. That the pyrophosphate of iron ranks next to strychnine in our available means of cure. It is most certainly a reliable tonic, and contains a large proportion of phosphorus, which is an active stimulant to the nerves, and by many believed to supply food directly to the nerves themselves. It may be given either in solution or in a pill, in from three to five grain doses, three or four times a day.

Strychnine was not employed in the first cases of paralysis which came under my care. All of these terminated fatally. It was given in connection with the other remedies named in the four last cases. One of these recovered and the other still survives. It was evidently beneficial in the case of the young

woman which I saw with Dr. Cleaveland, and its good effects were equally manifested in the case of S. F., that I visited several times with Dr. Hastings. But its real value as a therapeutic agent in diphtheritic paralysis can only be known when it has been subjected to more numerous trials and extended observations. Dr. Jenner says, in speaking of the treatment of diphtheritic paralysis, "in any case of the kind I again see I shall certainly give strychnine in small doses a fair trial.

It is of the highest importance in cases of reflex paralysis like those presented in this paper, that the treatment should be commenced during the first stage of the disease, and as soon as the loss of power in any of the muscles begin to manifest itself. In all cases which I have attended, except the one that was attacked during convalescence, (and which recovered) the disordered innervation had continued several days, and became alarming before medical aid was called in.

The number of recorded cases and observations of diphtheritic paralysis is too small, to enable us to deduce any certain pathological principles concerning it, or to establish with any considerable degree of certainty the real nature of the derangement. In all cases of *obscure* disease we must *accumulate, compare, and study the facts presented* before we can arrive at any just or satisfactory conclusions in respect to them, and particularly so when the nervous system is involved. The limited number of facts recorded will not warrant us at the present time in stating positively in what manner diphtheritic paralysis is produced. The same deficiency of facts, &c., prevents us from asserting whether a greater proportion of young persons suffer from nervous derangement than of adults, and also whether the disease, when it does occur, is more severe and fatal in the former than in the latter. The observations of Dr. Jenner, and my own limited means of comparison, tend however to such conclusions.

Article 6. Healed Ulcer of the Stomach, discovered after a fatal Ulceration of the Duodenum. By JONATHAN KNEELAND, M. D., Onondaga County.

(Communicated by the Onondaga Medical Society.)

On the 29th of December last, I was called to visit a woman, aged sixty years, a farmer's wife, the mother of six adult children. I had been consulted as to her stomach malady twice during the last five years, by Dr. Hall, who then attended her, but had never till the 29th ult., seen her. I found her anemic and emaciated, she had been some eight weeks under the care of an "eclectic doctor," who told me he had nearly despaired many times of the patient. She had so many diseases, among which he mentioned, "ovarian diseases," stoppage where "the valves shut up the colon," dyspepsia, jaundice, and liver disease. He spoke also of "disease of the nervous spine," and of neuralgy all over;" but now, said he, "I think she is all ready to get up." I took entire charge of the case on the 31st December, and found the following symptoms; loathing of food, vomiting, diarrhea; she had been costive most of the time during the previous eight weeks. Sallow skin, looking like yellowish putty, dryness of the surface, cold hands and feet, pulse from 100 to 110 regular, but small and sharp, tongue clean, but pale and deeply sulcated transversely, an appearance often seen in grave diseases of the digestive organs.

She complained of severe *gnawing* or *burning* pain in a circumscribed spot in the epigastric region, and extending thence through her back, and between the shoulders; the epigastrium was very tender to pressure, the heat at times at the seat of the pain was "like fire," as she expressed it; her vomiting occurred oftenest within one or two hours after taking food, when she would bring up food partly digested and acid—but she would often vomit mucus, insipid, or slightly saltish, appearing like the secretion of the stomach only—her ability to evacuate the contents of the stomach at any time by a voluntary effort, con-

joined with position and muscular contraction was very marked, which is common in some dyspeptic patients, the muscular coat of the stomach becoming hypertrophied. There is less nausea than of a sense of discomfort which bringing up the stomach contents will sometimes relieve. Her *intelligent* attendants stated that she had some time previous vomited a dark brown matter, and passed the same by stool, it looked like bloody matter they thought. I prescribed pills of nitras argenti, one-twelfth grain in a pill, 4 pills in twenty-four hours, alternated with sub-nitrate of bismuth, pulv. acacia and sulph-morphine in powder—so as to give her 3 grains bismuth, and $\frac{1}{8}$ grain morphine once in eight hours; lime water and milk taken ice cold; chicken, or beef tea, and milk porridge—all taken cold, and in small quantities; the diarrhea becoming troublesome, was to be controlled by starch and landanum injections—under this treatment she continued about twelve days without much change, sleeping a little more at night, and retaining a little more nourishment.

On the night of January 14th, she had more pain in the stomach, and vomited first mucus, then a dark reddish water, and at length several coagula of blood—iced cloths, externally, with the internal use of tannin, gallic acid and opium in pill form, and ice or snow, swallowed in small quantities at a time, which were very grateful to her, restrained the hemorrhage, which did not again recur—but much darkened blood with the appearance of having been partly digested was evacuated by stool during the next few days, diarrhea continued nearly till her death, which took place on the night of January 22d; on the 19th she had a sinking spell, from which she never fully rallied, but retained her consciousness, and after this had less urgent pain during her last three days.

She had vomited so much mucus during former attacks, and her pain had been so severe, that her medical adviser in years past had treated her for gastrodynia, caused by catarrh of the stomach, on the plan laid down by *Dr. Barrow* in *Tweedie's Cyclopedia of Practical Medicine*, and this treatment, the best part of which had no doubt been blisters, with bland diet and extreme abstinence, had lead to recovery so far that she had resumed laborious household duties, after several severe attacks which had occurred within the past few years.

Autopsy twelve hours after death, assisted by Dr. Alfred Hall and Dr. D. W. Burdick. On laying open the abdomen, we found

the intestines nearly empty, but looking well externally. We carefully inspected the contents of the pelvis, and found the ovaries, womb, bladder, fallopian tubes, ureters and rectum healthy and in their proper place.

The right lobe of the liver had contracted old adhesions to the diaphragm, but the whole organ was healthy in look and feel; the gall bladder was two-thirds full of normal bile, spleen normal. We ligated the cardiac extremity of the œsophagus and the jejunal termination of the duodenum, and carefully removed from the body the stomach, pancreas and duodenum, and proceeded more critically to inspect them, than we could when *in situ*. The stomach looked small, and more firmly adherent to the pancreas and the contiguous parts, than we find when the organ has been free from disease. The serous covering of the stomach in front and above, where unattached, looked healthy. On making an incision through its anterior aspect, midway between the smaller and larger curvatures, and carrying it from one inch below the cardiac orifice to one inch above the pylorus, we found the mucous lining of the stomach of a pale, pink color, covered with a normal and profuse secretion of mucus, excepting over an oval depression, occupying that part of the organ which rests upon, and here was *firmly* attached to, the pancreas. This cicatrix was one and one-fourth inch in its longest, by one inch in its transverse diameter; its edges were thickened, its depth varying from one-eighth to three-eighths of an inch; its bottom and edges were whiter than the surrounding membrane; the stomach was so much puckered around this opening, that on separating the stomach from the pancreas, the hole through the entire stomach was nearly round— $2\frac{1}{2}$ inches in diameter—and its edge bound with a band of coagulated lymph, which covered the bottom and marked the boundaries of the floor of the ulcer on the pancreas, from which I separated it; the coats of the stomach were all wanting over the cavity on the pancreas. No traces of abrasion or abnormal vascularity were seen in any part of the organ, excepting its diminished size, caused by the contraction of so large a cicatrized ulcer; it looked healthy, and it certainly had the ability to eject its contents in a greater degree, than a stomach which had not been contracted by ulceration, and rendered more muscular by much vomiting, as I noticed in the voluntary vomiting which remained in force, after all the other powers of the patient had failed.

The *duodenum* had lost by ulceration, some two and a half or three inches from the unattached portion of its upper third, one-half or rather more of the gut being gone for this distance, commencing half an inch below the pylorus, that part only remaining which attaches it to the mesentery and a flap of its peritoneal or serous coat, which covered the ulceration in front, excepting a small opening one and one-half inches below the pylorus, where this too was gone, and its edges thin, ragged and sanious; some minute blood vessels attached to the strip of duodenum, not destroyed, were clogged at their orifices, with coagula, whence doubtless came the hemorrhage, which occurred eight days before death. There was in the duodenum, below the perforation, some well-looking chyme; the ductus communis had not been disturbed in its functions, its insertion into the duodenum being below the perforation, no softening of the mucous lining of the pylorus, or of that of the duodenum below the ulceration, was found; the valvular folds of the lower part of the duodenum looked a little more vascular than normal, but not abraded or diseased. As no signs of disease appeared in the colon, the diarrhea of the last few weeks of life was perhaps owing to the disorganizing process going on in the duodenum.

The lungs and heart were inspected, and found remarkably healthy in aspect, as they had been in function during life.

One point in this case of practical value, is the well-established fact, that organic disease of the stomach, frightfully extensive and productive of great suffering and impairment of function for a period of months and years, is *capable not only of relief but of cure*.

Another point—How shall we diagnosticate gastric from duodenal ulceration? This was done here, and the diagnosis recorded two weeks before death.

Another truth illustrated by this case is, that no man may expect to cure a disease, or any number of diseases, not found in the patient treated, and that the more remedies are multiplied to combat mere symptoms and remove unrealities, the worse for the poor afflicted patient.

One anomaly, or apparent discrepancy, revealed by this autopsy, is, that chyme was found in the lower part of the duodenum, appearing well and prepared for assimilation, slightly tinged by bile, and about the consistence of well-beaten yolk of egg, which it resembled, being a little lighter colored, and seeming so mixed

with clear mucus as to appear semi-translucent. This fact, in connection with the emptiness of the stomach, and the small intestines and colon, for which the vomiting and diarrhea both help to account, indicates that the duodenum had lost its normal peristaltic action by which its contents are moved onward, and also probably, that entire perforation through the serous coat of the bowel did not occur long before death. The fact that no chyme like that found in the lower part of the duodenum had escaped into the body from the orifice in the duodenum, seems to confirm this view.



Fig. A.



Fig. A. Posterior view of the Larynx and Trachea laid open. Drawn Life Size.

- 1 Epiglottis.
- 2 Vocal Chords.
- 3 Occluded portion of the Larynx.
- 4 Tracheotomy Tube.
- 5 Constricted portion of the Trachea.
- 6 Curved portion of the tube as seen within the Trachea.

Fig. B.



Fig. B. Anterior view of the Larynx and Trachea. Drawn Life Size.

- 1 Epiglottis.
- 2 Thyroid Cartilage.
- 3 The Cricoid.
- 4 Tracheotomy Tube.
- 5 Constricted portion of the Trachea.

Article 7. Wounded Trachea, Obstinate Vomiting, Congested Lungs, Suffocation. By J. R. BOULWARE, M. D., Albany.

[Communicated by the Medical Society of the County of Albany.]

I present this case and pathological specimen, (consisting of a larynx and trachea) from the fact that it is one of very rare occurrence, the specimen being the only one of the kind, to my knowledge, that has ever been brought to the notice of the profession, either in this country or Europe.

Magendie mentions a case of a man who had a fistulous opening in the larynx for many years, but when this opening was closed by tightening his cravat, the air passed through the glottis, enabling him to speak in an audible voice.

This case is one of interest in a physiological point of view, as it proves, beyond question, that the larynx is the seat of the origin of voice, and also proves that the laryngeal voice is not essential to the formation of articulate language.

History.—M. B——, aged 23, well-nourished housemaid, single, womanhood well developed, of strictly temperate habits. She made an attempt at self-destruction by cutting her throat with a razor while laboring under a temporary aberration of mind. The cut is supposed to have been made from left to right, descending obliquely, wounding the crico-thyroidean membrane and dividing the cricoid cartilage and upper ring of the trachea, and several blood-vessels, but none of large size.

Treatment.—The lips of the wound were drawn together and dressed with adhesive plaster; at the end of three weeks the wound had all healed, with the exception of a small opening in the trachea just below the cricoid cartilage. The edges of the wound were now touched with strong caustic and drawn together with adhesive plaster; soon after mucus collected in such quantities as to threaten suffocation, and render the opening of the wound and insertion of the tracheotomy tube, imperative. She wore the tube a few days, when it was withdrawn and the wound

dressed with adhesive plaster. The wound now began to contract slightly impeding respiration; this contraction of the wound continued, diminishing the calibre of the trachea so that dyspnœa became so urgent as to render it necessary to enlarge the wound, which was done with a probe-pointed bistoury, and the tube inserted, which remained in the wound for several weeks, when it was withdrawn and another attempt made to heal the opening by the application of adhesive plaster, and at the end of eleven weeks from the receipt of the wound, the opening had entirely healed and remained closed five days, when the patient began to suffer so greatly from dyspnœa as to render it necessary to reopen the trachea, which was done, and instant relief followed. No further attempt was made to heal the opening, which was situated just below the cricoid cartilage, and in which she constantly wore a tracheotomy-tube (measuring exactly quarter of an inch across its shortest diameter). From this time she began to lose her voice, and in a few weeks it had entirely disappeared.

Closing the opening in the trachea with the fingers or handkerchief, would immediately cause suffocation, proving that no air could pass through the larynx, yet she could speak in an audible whisper; she improved much in articulation, and this improvement continued during life; was able to sound all the letters, and by placing the ear near her mouth, she could converse and readily convey her ideas in an audible whisper. She enjoyed excellent health up to about four days before her death, when she was attacked with urgent symptoms of suffocation. There being considerable difficulty in expectorating mucus through the tube, it was withdrawn, and with the aid of forceps, several clots of tough viscid mucus were removed from the trachea, affording instant relief. During the next few days she had several similar attacks, dyspnœa becoming more intense at each additional attack. These paroxysms of difficult breathing were preceded and accompanied with violent and distressing vomitings. These persistent and severe vomitings, together with other appearances, lead me to suspect that she was secretly taking drugs to enable her to get rid of what she *now* considered an impending shame.

All the symptoms became more urgent, vomiting became more intense, secretions of viscid mucus more copious, blocking up the air passages, dyspnœa more threatening, countenance livid and anxious. She thus died, presenting all the symptoms of suf-

focation, nineteen months after the receipt of the wound. Post-mortem ten hours after death, assisted by Dr. C. D. Mosher.

External appearances.—Countenance turgid, abdomen distended, body well nourished and finely formed, presenting a uniform symmetry in the development of the muscular system; rigor mortis moderate.

Head.—Brain not examined.

Thorax.—The pericardium and muscular tissue of the heart and valves of the heart and arteries, were healthy; the left auricle and ventricle were empty, the ventricle contracted, the right auricle and ventricle were distended with blood partially coagulated; both lungs were much congested; the tissue of the lungs was healthy, with the exception of a small portion near the apex of the left lung, which was of a reddish brown color and softened, readily sinking in water, presenting the appearance of pneumonia in the second stage; the bronchi and lower portion of the trachea were almost completely obstructed with large quantities of viscid, stringy mucus; blood was intimately incorporated with these clots of mucus, giving them a pale, dingy red color throughout. On examining the smaller bronchial tubes, many of them were found to be completely obstructed with this viscid mucus. On laying the larynx open along its posterior wall, it was found to be completely obstructed at the upper portion of the lower third of the cricoid cartilage by a dense white fibrous tissue. On a more minute examination, this fibrous substance was found to be perfectly organized and firmly attached to the inner walls of the cartilage and extending to its lower border, filling up all that portion of the larynx included within the lower third of the cricoid cartilage, rendering it utterly impossible for any air to pass through the larynx. That portion of the trachea immediately connected with the larynx, was contracted to one third less than the normal size.

Abdomen.—There was one inch of fat in the abdominal walls. On reflecting the integuments from the abdomen, the uterus was seen to be much enlarged and encroaching upon the umbilical region, the fundus was about one inch above the umbilical depression. On laying the uterus open, it was found to contain a well formed male foetus, measuring $12\frac{1}{2}$ inches in length and weighing 17 ounces, (avd. wt). The abdominal viscera were, in all respects, healthy.

Article 8. Medical Provision for Railroads as a Humanitarian Measure, as well as a Source of Economy, to the Companies. By EDMUND ARNOLD, M. D., M. R. C. S. E., Delegate from Westchester county.

We live in an age when calls upon the public in aid of suffering humanity are seldom disregarded. A need may not be immediately recognized, but, once perceived, there are always found in the community actively benevolent minds, who with heart and purse betake themselves to the task, and resolutely and energetically keep the public mind alive until the desired object is attained. In how many noble institutions have these efforts culminated, institutions for the aged and infirm, for deaf-mutes, for the blind and the lame, reformatory establishments of various kinds, as well as noble hospitals both for general and special purposes. Then, again, our coasts are well supplied with life-boats, or mortars to send a rope to the rescue of a perishing crew; well organized fire companies are ever on the alert to guard our lives and property from the ravages of fire—would that I could add they were well supplied with fire escapes, for the benefit of our over-crowded tenement houses, too often limited for egress to a single narrow staircase—and hundreds, I might say thousands, have been saved from a watery death by the active exertions and widely circulated regulations of the Humane and similar societies. With institutions so numerous and so varied, one might readily believe that provision was already made in one way or other for every class of victims to sudden casualty; yet, with all this, there is still a great and pressing want to be supplied, an evil of gigantic proportions yet to be grappled with, one not only of a deeply interesting character to our profession, but of such vital importance to the traveling public, that we may well wonder it has never yet attracted attention.

Within the last half century our mode of land transit has been entirely revolutionized. The old stage coach has gradually

given way to the railway engine with its thundering train of cars. A vast network of railroads spreads itself out over the land, bringing the most distant points within easy reach of each other, and by the cheapness, speed, and, in the main, safety of the mode of travel, inducing tens of thousands, who probably under the old system would never have found themselves at any period of their lives ten miles away from the house in which they were born, to now traverse the continent without a thought of inconvenience or danger.

Let, however, the iron horse, usually so tractable to human guidance, be but for a moment interfered with in its course, and it becomes a crushing, tearing monster, breaking and splintering cars, scattering their mutilated occupants around in all directions, and giving to the ground the appearance of a recent battle-field. It is useless to say that all this is unnecessary and may be avoided. Apart from accidents arising from carelessness of employees, or neglect of regulations, or signals, or switches, leading to collisions, to driving trains through open drawbridges into the river beneath, or to running cars off the road and over precipices by too great a rate of speed on heavy curves, there are numerous unlooked-for causes of disaster, among which may be enumerated, the straying of cattle on the track, the loosening of a rail, breaking of an axle, springing of a wheel from frost or defective casting, the gradual undermining of an embankment by water, the falling of a piece of rock on the track just previous to the arrival of a train, and many other causes that will occur to our minds on reflection; so that while all that human forethought, care, and well devised regulations can do has been tried, we nevertheless are every now and then startled by the ominous heading in our newspapers of "Fearful Catastrophe" on this or that railroad, followed by harrowing details, and terminating in a long list of killed and injured. Nor is it only by these great accidents that life and limb are jeopardized; still more numerous are the cases of individual injury to passengers, employees or others, arising, it is true, from want of care or thoughtlessness on their own part, yet none the less deserving of sympathy and of our best efforts in their behalf.

Public attention having never yet been fairly directed to this matter few are aware of the magnitude of the question under consideration. By the kindness of a friend I have been supplied with a copy of the Report of the State Engineer for the year

ending September 30, 1860, from which I may here be allowed to make one or two extracts. A comparative statement for the years 1856 to 1860, inclusive, a period of five years, of railroad accidents on thirty lines of this state, furnishes the following facts:

	PASSENGERS.		EMPLOYEES.		OTHERS.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1856.....	18	78	48	18	107	27
1857.....	11	36	47	26	65	33
1858.....	20	142	29	25	67	46
1859.....	10	33	28	24	81	48
1860.....	13	36	28	17	111	45

Making a total of six hundred and eighty-three killed, and six hundred and twenty-four injured, or thirteen hundred and seven in all, an average of two hundred and sixty-one per annum. Many of the above railroads are short lines, and easily supervised and kept in order, so that serious accidents are comparatively few in number, while five of them are mere city roads, the cars being drawn by horse power. I will therefore take five of the leading roads, with a total length of thirteen hundred and thirty-eight miles, and give the numbers killed and injured thereon in the above five years:

PASSENGERS.		EMPLOYEES.		OTHERS.	
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
47	223	139	68	342	121

Making a total of five hundred and twenty-eight killed and four hundred and twelve injured, or nine hundred and forty in all, an average of one hundred and eighty-eight per annum. Most of the above railroads lie mostly within the State, and there are on the whole, few, if any, to be found better managed, while many in other parts will certainly ill compare with them either in construction or management. To consider this question in all its magnitude, we should extend our inquiry to lines in other parts of the Union and to other countries, but for all present purposes to deal with our own State is sufficient.

What an awful sacrifice of life, in part at least unnecessary, what a fearful amount of human suffering the above figures cover! When we speak of so many killed, it is not thereby meant instantly killed; fortunate, indeed, are they in comparison with those allowed to sink and die in a few hours from the total absence of everything requisite to meet their condition, or to give

them a chance of life. We know to a certainty, that every now and then a terrible accident will occur, though we cannot fix either the time or the locality; we know also, that where it does occur, there is not a rag on hand to staunch a bleeding wound, there is not a single appliance within reach of any medical man, who might happen to be in the cars, to enable him to render effective service, and this leads naturally to a very important part of my subject, namely: that of immediate management of the injured, under the present system, or rather under the want of it.

I think it will be conceded that, taken as a whole, railway casualties may be regarded as about the most fatal that surgeons meet with, and as they occur often in out of the way places, much valuable time, even under the most favorable circumstances, is lost before they can be put under efficient permanent treatment. Leaving out of the question those instantly killed, among the injured who die within a short period, many will be found whose injuries would not be likely to prove fatal under other circumstances, but in whom intense excitement, in addition to the injury, is followed by rapid and fatal prostration. In others again, whose injuries are more severe, and perhaps accompanied by much loss of blood, the collapse is proportionally severe from the commencement, and they sink before assistance can be obtained, or when they get it are so far reduced that the case has become hopeless. In the former class, patients should be at once removed from the scene of excitement, and prompt measures taken to allay nervous irritation, as well as to encourage them by letting them feel and see that they will be almost immediately well and efficiently provided for; in the latter, hemorrhage, if present, should be arrested, means taken to promote reaction, and the sufferers placed in the least painful position, until a station is reached, where they can be attended to. Are these things done? I think the answer generally must be, No. Could they be done? I say emphatically, to a great extent, Yes. How, will be considered in another part of this article.

Among the recorded causes of individual injury, are such as the following: Brakeman fell from train—leg cut off; engineer fell from engine—killed; passenger fell from platform while stepping from one car to another—limbs crushed; arm torn off by coming in contact with pier of a bridge, while carelessly thrusting the member out of a window. Again, we read of per-

sons with legs and arms crushed or cut off while crossing or walking along the track, and dying a day or two after. Now, let us suppose from some one or other of these causes, a leg is crushed, in a locality far away from any town. The train is stopped, and the sufferer is quickly surrounded by a curious and sympathizing crowd. Pocket handkerchiefs are freely offered for bandages; and if he is a poor man he is deposited on the floor of the baggage car; if a passenger, on seats, in the best way circumstances permit; sometimes, however, on the bare floor too. And so they go on; every jar or unsteady movement of the cars causing intense pain to the victim, until a station is reached, where he is deposited and left to —, Providence or chance, as we choose to term it. The train pursues its way, and the temporary excitement is quickly forgotten. But let us return to the injured man, and see the case to the end. The nearest doctor is sent for, who, perhaps, when he arrives, does not know what to do, and promptly concludes that the patient will die; nothing can be done for him. Unwilling so to relinquish life, the sufferer sends for another, perhaps, from a long distance, who, on reaching the spot, proceeds to do all that is necessary; but too much time has been lost, and the result is chronicled in a couple of lines in some local paper, which attracts little attention, and finally he figures as one killed in the annual railway report. Let a great accident occur, by which a train is wrecked in a similar locality, and what a terrible scene of confusion presents itself. Doctors are sent for in all directions, good, bad and indifferent, and ere now, a whole hospital staff has been telegraphed to proceed to the scene of disaster. They cannot leave their duties, and assistants are sent of course. Every one goes to work upon his own responsibility; the want of previous provision, of system and proper management are painfully felt, and loss of life and limb, and heavy pecuniary damages to the company are the result. I do not mean to say that matters are always as bad as here represented; but I do assert, that when they are not, it is owing to accidental favoring circumstances, rather than to proper provision; and that our present arrangements are not such as the claims of humanity imperatively demand at our hands.

As cases of personal experience must be necessarily limited, I must request to be allowed to quote one or two already published in a small pamphlet, written by me, rather with a view to break ground on this important question than as a full exposition of it.

On the 18th of January, 1860, a way train ran into an express train, stationary on the line; the cause recorded, being want of attention to signals, killing four, and injuring six persons. Among the former was a lady, who died in our village the same evening. Having, in the former article alluded to, quoted this case somewhat incorrectly, I will now give the testimony of a very competent physician on the inquest, copied from one of our local papers, which I have been fortunate enough to obtain. He says: "I was with Mrs. F—— from the time she was taken out of the wreck until she died; there was a compound fracture of both bones of the left leg, and a lacerated wound on the upper and internal part of the thigh; there were also bruises about the head and on the left arm, but not, as I considered, dangerous; I suppose the cause of her death to have been primarily the nervous shock to her system with its consequent depression; and, secondarily, loss of blood; there was no evidence of internal injury sufficient to cause death; little was done for her beyond administering stimulants; all was done that I deemed proper, except that she should have been placed in a position to have received more speedy attention; I advised her being left at Tarrytown, the first stopping place, but it was thought best by those who had her in charge that she should proceed to New York so as to be among her friends. She was finally taken off at Yonkers, and died about seven o'clock in the evening." Here we have the whole matter. Everything was done that was deemed proper by a talented practitioner, *except* that she should have been placed in a position to receive more speedy attention. Here is the origin of a vast amount of mortality; here is the very thing that first suggested to my mind years ago the necessity for some special provision. In this case, the shock to the system was very severe, but could hardly have been greater than in the one I shall presently contrast with it; and the actual injuries were far less in amount.

Now, had the sufferer been gently removed to the nearest town or flag station and her necessities promptly attended to, instead of time being lost, and carrying her on from place to place, a downward impetus being thereby given to already depressed and rapidly failing vital powers, might not the result have been different, and not only a valued life saved, but liability on the part of the company to the highest amount of individual damages avoided?

By way of contrast let us take the following case: In October, 1857, a boy, eleven years of age, jumped out of the baggage car of an express train at full speed, against the rocks, in a cutting, and, rebounding on the track, was picked up horribly mangled. His injuries were as follows: The left foot and leg from midway below knee, completely smashed and in part torn away, fracture of the right thigh, compound fracture of the right leg midway below knee, both bones protruding, compound fracture of the right great toe, and a severe scalp wound of about three inches in length. When we add the fearful violence to the general system necessary to cause such a mass of injuries, the case might well seem hopeless. He was quickly removed to his parents' residence, and medical assistance promptly at hand. I had the satisfaction of discharging him sound, of course with exception of loss of one leg below knee, after four month's attendance. There cannot be a doubt that, had this boy been carried in the usual way twenty miles to a distant hospital, he would have been added to the list of railway victims, and his death regarded as a matter of course, instead of growing into a fine, intelligent lad, and supplied with a Palmer's patent leg, being actually employed not long since as a runner, by the New York agent of that valuable apparatus. In this case everything favored prompt attendance. The train was little more than a mile from the station, and at the moment of the accident another was coming up in the opposite direction which brought him back; carriages were in waiting for this due train, in one of which he was immediately removed home; another surgeon and myself were on the spot almost as soon as he arrived there, and desperate as the case appeared to be, the saving of time proved to be the means of saving life.

In February, 1854, messengers came to the village, between 3 and 4 A. M., stating that the bridge at the creek had broken through, that a car-load of passengers was submerged and medical assistance needed. It was a bitter cold dark morning. I hastily gathered all that I thought might be useful, and after several times narrowly escaping a capsize in snow-banks, reached the spot. Matters were not so bad as had been represented. One engine had got safely across; the second, for there were two, had gone down with the express baggage car, in deep water, and the passenger car rested on the top of the latter, hanging half-way over the end of the broken track, thus allowing the few passengers to escape. Two scalded firemen had already been

attended to. I made inquiries whether any others were hurt, but could learn nothing satisfactory, the employees seeming to regard me rather as an interloper than in any other light; I consequently started for the scene of the accident on the New York side. It was still dark, and on reaching the drawbridge, where the rail was laid along single timbers, which afforded the only means of crossing, these were so covered with ice that, after a few steps I found it impossible to get over without the greatest risk of being blown off on to the masses of ice below, so I turned and went home. I subsequently learned that I had been within a hundred feet of the express messenger, who would not leave his charge, and was suffering intensely from a sprained ankle, and for whose relief I might have done much, while assistance did not arrive from the city for several hours afterwards. Lucky was it for him that his injuries were no worse.

One more case and I have done with this part of my subject. Some two years since a man threw himself down under an empty passenger car on the off track and went to sleep. Meantime the train came along, backed up and took off the empty car, which went over both legs of the sleeper who had not been observed. Here was a case at a station. I shortly after arrived and found him lying on the floor of one of the waiting rooms in the midst of a large crowd, with both legs fearfully crushed and bleeding profusely. What was to be done now was the question. Nobody would take him in for he was but a poor loafer, and certainly nothing could be done where he was; the only alternative therefore was to staunch the bleeding, and as a train was soon coming up, he was bundled up in the best way circumstances permitted, and so sent as usual in the baggage car to the City Hospital with a result easily foreseen. His chances of life were perhaps but small, but even that little was denied him, and he died almost as soon as he arrived.

These cases which might be multiplied *ad infinitum*, those occurring in one place being only repetitions of what takes place in another, go far to prove that none of our present institutions are sufficient to meet the peculiar wants of the injuries under consideration; that as many sink from shock and from the length of time that elapses before they are subjected to treatment, half an hour to an hour often determining the question of life or death, it becomes the imperative duty of the railroad companies, as well as their interest from the great pecuniary losses they are subjected to, to

make some special provision adapted at least to relieve the immediate pressing necessities of those who may be injured on their lines, and thus place them in a condition for future successful treatment.

Having arrived thus far I think it is made sufficiently apparent, that the present state of things involves injustice to the public as travelers, who are all equally liable to injury; injustice to the public again as stockholders by the amounts wasted in litigation or damages for real or spurious injuries, and in this the widow and orphan, whose little means are invested, are as much interested as the merchant and capitalist; injustice to the injured, who cry in vain for help when it is most needed; and, finally, injustice to our profession, whose members have too often to give their time, labor and skill gratuitously, and I may here observe, that in all the cases of this class I have had to do with, I have but in one received any remuneration. We may not ignore the claims of humanity; nor do we wish to; but to that public, on whom after all the great burden of the wrong falls, I say: do also your part in satisfying those claims, strengthen our hands, give us needful appliances and conveniences, thus enabling us to use whatever skill we may possess to the best effect, and while we shall still gain little pecuniarily, you will be gainers in every way, you will mainly reap all the benefits.

Assuming the necessity for medical provision for railroads as established, I shall now proceed to develop practical plans for the accomplishment of this object. It is clear that the appointment of a surgeon, or a corps of them, at the main termini would not avail, nor would it answer to appoint paid surgeons on the line, who might never be employed. It must be borne steadily in mind, that our object is not to make permanent provision for the injured, though it may be used as such when desired, but merely to bridge over that fearful and fatal gap which intervenes between the time of the infliction of the injury and that when the sufferer can be handed over to the surgeon of his own choice, thereby affording to the latter as good a chance of curing his patient as though he had taken possession of him from the first moment. To meet on the one hand the requirements of the case without infringing on the just rights of companies on the other, the provision must be *sui generis*. An accident may be recorded in one locality this week, the next may occur a hundred miles away, yet the same provision should extend equally to both with-

out subjecting the respective companies to unnecessary expense. Such is the problem to be solved. I propose to consider the question under two heads: first, by arrangements along the line; secondly, by arrangements in the cars, by one or other of which, or by combinations of both, we can effectually secure the desired end on every railroad in existence.

First, then, as to arrangements along the line: and here I shall again avail myself of what I have previously written. Let each company appoint at its main terminus a medical inspector, with the rank of assistant superintendent. The duties of this officer would be to organize the line into districts; to issue medical regulations, with sanction of the general superintendent, to whom he would be subordinate; to receive and collate reports, and to act as medical adviser of the board of directors in all pecuniary and other transactions with their district surgeons, to be presently mentioned. His duties would be of a confidential character, and he should be entirely in the interests of the company. His functions being multifarious, he should be a salaried officer; but as his duties would not interfere very materially with the requirements of private practice, his salary need not be a large one. Now, where an accident occurs, every railway servant is willing to assist, and does the best he can, often, however, acting very injudiciously for want of knowing better; one of the first duties, therefore, of the inspector after organizing his department, should be to issue a simple code of directions to station masters and flagmen, instructing them what to do previous to the arrival of a medical man in cases of accident. For instance, if a person is bleeding from a wound, the employee should be directed and shown how to apply a pad and bandage; and so a man may be saved from bleeding to death. If the sufferer is pale and chilly, with cold extremities, the railway official should be instructed to make a bed on his stretcher, to heat a brick and put it to the feet, also to administer a little warm tea at intervals, thereby often saving a man from sinking to death; and when a medical man arrives, instead of having to abandon the patient as a hopeless case, reaction may be commencing, affording encouragement to bestow his most strenuous efforts, or the powers of life may be so far restored that he can decide and act upon the necessary treatment at once. So much for the duties of the inspector.

In the next place, let the companies appoint district surgeons,

unsalaried, but payable for actual services rendered, at the principal towns along the line, and not exceeding from ten to fifteen miles apart—the district of each to extend to the flag station nearest to midway between any two. The principal advantage attending such regular appointments would be that, where medical assistance was not immediately at hand, the employees would know exactly where to send for a competent practitioner. At each such surgical station a small room should be set apart on the ground floor, furnished with an iron cot bedstead and bedding, a stretcher with mattress and pillow, a small table, one or two common chairs, and a small wood stove, by which, if required, the room could be heated in a few minutes in winter, or hot water or a brick for application to the feet at any time. I may here observe that, if the companies did their part, I have no doubt each surgeon could raise among his own friends and patients not only enough to furnish the main station, but also to provide every flag station with a stretcher and mattress, to be kept always ready for use. The surgeon might also keep at the station a little linen, lint, bandages, sponges, a few splints, and such minor articles, for immediate use. He should also make it a rule to carry a tourniquet. In case of an accident, a stretcher and bed could be obtained from the nearest flag station, or those from the adjoining ones if several were seriously hurt, and the medical officer summoned, also those of adjoining stations if necessary, as well as any competent medical men in the vicinity. If an injury were too severe to risk removal, the patient could be carried to the nearest flag station until the immediate danger had subsided; where practicable, however, he should be carried to the district station, his immediate wants there attended to, and provision made for safe removal. When a surgeon is summoned to the scene of an accident, he should have the right to avail himself of any passing train that as little time as possible might be lost; and it should be his duty to examine carefully into the amount of injuries sustained, and to keep notes of the same for future refreshment of his memory; also to furnish a copy to the inspector, to be kept on file at the chief office. In cases of fraudulent or exaggerated claims upon companies, their medical officers would become most important witnesses; and I believe the amount thus saved would far exceed all costs, and tend greatly to diminish litigation.

By such arrangements if a person were injured severely on

the line, passenger or otherwise, he would be laid on a comfortable mattress, his limbs arranged in the position affording most comfort, and so be carried by hand on a stretcher into or out of the cars without further disturbance until he reaches his destination. If several were injured, messengers might be sent to the adjoining flag stations or the engine and tender detached thither; and so, in a short time, beds would be brought to the spot, and our first great need supplied. If any medical men were at hand, they could at once render valuable assistance; meanwhile, the district surgeon would be sent for, who, on his arrival, would take authoritative charge, and promptly and efficiently proceed to do whatever could be accomplished by a surgeon of skill and judgment. System and order would work out their natural results, suffering would be diminished, and life oftener saved. With the general introduction of such a system, we should have heard of the last of a railway victim, with reaction approaching and returning circulation, awakening, perhaps, after a twenty miles' ride, to intense suffering with the hard floor of a baggage car for his bed, a coat rolled up for his pillow; then having to endure the almost insufferable agony of removal, with broken limbs dangling, or awkwardly handled to a carriage; and from thence once more, with powers now for the second time prostrated, to the bed, from whence he is never destined to rise again.

The above plan would be very well suited to such a road as the Hudson River Railroad, where there are flag stations at almost every mile, and where important towns are near together. Many of the lines, however, run through thinly populated districts, with long distances intervening between stations and flag stations. Here, our apparatus would not be sufficiently accessible; and we need, therefore, some slightly different provision. This must be furnished by appliances in the cars themselves. In many of these, there is at the end a small portion partitioned off, and containing a couple of seats. Remove these, and we have all the space we want. With three or four stretchers and mattresses, with proper bed furniture to match, a dozen yards of ten cent muslin to make rollers, a little linen and lint, a couple of rolls of cotton batting, a yard of strapping, a few square feet of thin hard pine, a small saw to cut it up with, a stone bottle for hot water, and a tourniquet or two, which any conductor can be easily taught to apply; adding, perhaps, a little brandy, a

small bottle of laudanum, and one of hartshorn. We shall have provision, such as would not only allow a conductor to perform the first requisites, but to enable a moderately efficient medical man, should there be one in the cars, which is often the case, to put up a patient in a comfortable manner until he was in a situation to be placed under permanent treatment; or, at least, in charge of a district surgeon, who might live at a considerable distance from the scene of the accident. For instance, suppose a brakeman, or passenger, stepping from one car to another, fell from the platform and sustained a severe fracture, with other injuries; the conductor, if there were much hemorrhage, could apply a tourniquet, place him in a comfortable position on a mattress, apply a warm water bottle to his feet, and so carry him, with little disturbance, until delivered to the surgeon who was to treat him. If a medical man happened to be in the cars, he might, in addition, pillow the limb, or use splint or bandage, or administer restoratives, or an opiate, as the circumstances of the case warranted in his judgment. In other respects, the same principles and mode of proceeding would apply as heretofore laid down. The car, containing the above requisites, should be as near to the center of the train as possible, as least liable to injury. One or other of the above named provisions, or both combined, would suffice to meet the wants of every railroad in existence. In the case of short lines of railroad, not exceeding twenty or thirty miles, an inspector would be unnecessary, requiring only provision in the cars, and a surgeon at either end. Where a short line is leased to a great main road, the medical arrangements of the lesser would be merged into those of the greater.

Such is the basis I propose for a general system of medical provision for railroads. It would be out of place here to enter into the nature of the instructions and regulations that would issue from the inspector's office for the guidance of his staff, further than to say that they would probably resolve themselves into two kinds: First, such as might be suggested by the superintendent as necessary to bring the whole working arrangements of the line into harmony; and second, advisory as relating to new discoveries in science, new principles of treatment, new appliances, or whatever may seem calculated to promote our efficiency as practitioners. An institution so extensive cannot be expected to start into existence in full perfection, though all our main ends

will be secured from the commencement. After a little working of the machinery all asperities will be smoothed down, and a system as perfect and beautiful in all its parts as combined talent and skill can make it will soon result.

A word with regard to our profession. We shall here have a great number of intelligent professional minds enlisted and immediately interested in the work. From such many excellent practical suggestions will emanate, which gradually embodied into rules and regulations within the capacity of employees will tend to perfect the general system and increase its efficiency. Should the medical officers of a line come together once a year bringing reports of cases and the results of their experiences, accustomed as they would be to treat desperate injuries, we might look for much, tending to advance general professional knowledge. Whatever proved of eminent utility in one case would become the common property of all, and might at stated intervals be embodied in circulars, which would be interchanged with similar ones issued by the officers of other lines. In most neighborhoods efficient medical men will be found, there may however be some localities newly settled and sparsely populated where good surgeons, if any at all, are difficult to be found. In such places there are often influential men, who are selected as directors of the line, which passes through them. Let these look around, select from among the more distinguished young graduates of our great medical schools competent men for their district surgeons, give them enough of the family patronage and that of their friends to enable them to live at the start, and they will gradually become the consulting surgeons of their neighborhood, introducing a higher standard of local professional attainment, as well as helping to elevate and enoble our profession in the minds of the people generally.

A few words must suffice, as not properly belonging here, with regard to the economy to railroads generally in adopting a system of medical provision. I have already alluded to the diminution of litigation and check to fraudulent actions, by the command, on the part of railroads of medical witnesses, who had been enabled to examine every injured person at the time of the accident. To this must be added the diminished liability of the companies, which will be in proportion to the life-saving efficiency of the arrangements proposed. In the statements of expenses for 1860, in the State Engineer's report, we find under the head of "Damages to Passengers," on the five railroads previously men-

tioned, the sum of \$50,706 (I omit cents), of which \$33,626 were paid by a single corporation, although only nine passengers were killed and forty-three injured; while another paid only \$12,366, with eighteen passengers killed and forty-three injured; a third paid \$1,241, with twenty passengers killed and forty-six injured; and again with a fourth, \$3,223 are registered against a company with no passengers on the killed and injured list. This part of our statistics therefore affords no uniformity in its results, as might be expected, where two or three years may elapse on a line without any very great accident, although when one of the latter does occur, the damages may amply compensate by their amount for the smallness of them in other years. Taking an average of the amount paid by the five alluded to previously, in 1860, it will be a little over ten thousand dollars for each. On some lines no accidents are recorded under any head. On sixteen lines where such have occurred, with a total length of 1,954 miles, the total amount of damages paid for injuries to passengers was \$60,725, a little over \$3,100 for every hundred miles of road. In other years of course the statements will vary, some paying more, some less. Some will meet with heavy accidents where none have heretofore occurred, and others will be comparatively free from them, which now figure heavily in the list. As with the advent of epidemics, there is no certainty about them, except that they will certainly turn up somewhere or other. Let them not find us unprepared.

Of the thirteen hundred and seven persons killed and injured, and heretofore alluded to, we find that six hundred and eighty-seven belonged to the companies, either as passengers or employees, while six hundred and twenty, or nearly one-half of the whole number were persons unconnected in any way with the respective lines, and for whose injuries the companies cannot for the most part be held in any way responsible. They cannot, nevertheless, be overlooked in any humane endeavors for the relief of the injured. True, many of these are killed instantly by being run over or struck by the engine, but still a very large number remains, and this leads to the irresistible inference, that while the companies should be compelled to do their duty in this matter, there is also a large part to be performed by the public themselves, upon whose shoulders a portion of the burden should justly rest. Let, therefore, the railroad managers provide their stations or surgeons, paying the latter for the first dressing, at

least, in all cases, and giving to all a share in their life-saving arrangements, whether connected with the line or not. Let, on the other hand, the public establish societies on the same principles of benevolence as those for the saving of life by any other class of casualties, calling them Railroad Accident Relief Societies, or by any other name they please, whose object it would be to strengthen the hands of surgeons by furnishing stations and flag stations with needful apparatus, such as the stretchers, bedding and bed-furniture, splints, and those necessities which no individual practitioner could be expected to possess in sufficient quantity to meet the requirements of a great accident. Of these the inspectors of lines might be made the distributing agents. As passengers and employees would share in the advantages offered thereby to others, the companies would thus get a fair *quid pro quo*.

When the companies have done all in their power, and as far as judicious regulations and careful and vigilant supervision go, I believe they have, to ensure the safety of those who travel on their lines, and have further by proper arrangements done their best for the recovery of those who may be injured, thus making complete provision for every emergency in every department, they will have a good right to claim, at the hands of their respective legislatures, relief by the introduction of measures of limited liability. As the laws stand at present, I believe it is sometimes cheaper to kill people outright than merely to hurt them. They should not be made to pay more for lives saved than for lives lost. To railroad managers these propositions are respectfully submitted. Let them once take into serious consideration the question, whether the claims of humanity and the interests of stockholders are not entirely reconcilable in this matter, and the ultimate result cannot be doubtful.

To return to my legitimate sphere. I have in this paper devoted more space to the necessity for medical provision for railroads, than to the details of it; for, let but the truths I have here endeavored to lay down be established in principle, the necessity for action in the matter of railroad accidents be once fairly impressed on the public mind, and we may rest assured that, based either on my plans or some better ones, a great and noble institution will ere long start into existence; the result of which will be to save as much life, to alleviate as much suffering as any one of the great benevolent institutions of the day. We must not,

in this or any other new and great undertaking, expect perfection at the start. There will be many practical difficulties to surmount, requiring in any one who shall be entrusted with the task of putting the scheme into practical operation, talent, energy and entire devotion to the work before him. We should have to decide exactly before going to expense, what apparatus we would employ, and in some instances, adopt new contrivances. Abundance of surgical apparatus we have; but bearing in mind that our arrangements are but for temporary purposes, that everything must be reduced to the smallest amount of space compatible with the object to be attained, as well as to be of the most portable kind, that cheapness, too, will be an essential matter, we shall have to look forward to many new and simpler appliances than those often in use in permanently treating a case. For instance, the most important piece of furniture would be the hand ambulance. Now, I think it would be easy to construct a thing of this kind, which folded up, would form a simple flat stretcher; by legs dropping from the sides, it would form a bedstead; and by curtain posts, that might be raised up from either end, the curtains being usually kept folded under the mattress, convertible into a covered hand ambulance; so that from the moment a patient was taken up and laid on the stretcher, whether he were conveyed to a station, or put into a car or carried through the streets, he would never have to be disturbed from his original recumbent position until placed under the care of the surgeon destined permanently to attend him. In this and similar matters, with able inspectors, willing to listen to every suggestion, yet capable of sifting the chaff from the wheat, and determined to adopt nothing that was not thoroughly practical, as well as reasonably economical, with a large body of able practitioners associated directly in the work, and the general intelligence of the whole mass of the profession to guide and assist them, all obstacles, as far as our part was concerned, would be easily surmounted.

I had now arrived at the concluding paragraph of my paper, when I received an important communication bearing immediately on the subject in question. Singularly enough, while I was working out the above details, another gentleman was preparing a great and comprehensive measure now ready to go before the legislature with the sanction and support of most of the leading railroad presidents, as I am informed, and of which this very

medical provision forms an essential feature. It is only within the last few days that either party has been aware of the proceedings of the other, yet the two measures dovetail into each other exactly, the one clearing away all financial difficulties, the other supplying a basis for the proposed surgical attendance. I am permitted to give an abstract of the proposed measure.

It provides for the association of the railroad companies of the State, the same to be a "body politic and corporate," managed by a "board of managers," consisting of the presidents or such other officers of the associated companies as may be designated by the respective companies and the president of the association, who shall be a citizen of the State of New York and not an officer of any railroad company.

This association shall make up a guaranty fund of \$100,000, chargeable upon each road pro rata as to its passenger traffic, and to enable the association of railroads to meet casualties the respective companies shall, in their discretion, be allowed to charge one-half of a mill per mile to every passenger in first class cars, or one cent for every twenty miles or distance within it in addition to the usual fare. In return for this, each passenger is guarantied, in case of death, \$5,000 to his heirs, in case of loss of a limb, or an incurable injury seriously interfering with usual occupations, \$5,000, and for other injuries in proportion, to be hereafter definitely laid down. Surgical stations are also to be furnished along the line of the road and competent surgeons appointed to attend them when required. This done, the railroad companies associating are to be exempted from all further liability on account of any accident to passengers. At the end of each year whatever remains of the associated fund, after paying all expenses, shall be divided into two equal parts, the one to accumulate until a permanent fund of \$100,000 is created, the other to be equally divided and paid to the trustees of four hospitals, two in the eastern and two in the western part of the State, they undertaking in return to treat gratuitously whatever cases of injury may be sent to them from the railroads. When the \$100,000 fund is completed, then the whole surplus will go said hospitals. Thus whatever is obtained from the public will be returned to the public. It might be urged that companies, by such a measure, would be relieved altogether from pecuniary liability and might become careless. To obviate this, a sort of reward and penalty clause has been introduced. It provides that

on an accident occurring on any road, the company shall be fined to the extent of one-third of the amount to which it has rendered the associated fund liable. This fine is to go into a special fund, which, at the end of the fiscal year, is to be divided pro rata as to their contributions to the casualty fund, first charging the respective companies to the extent of the one-third of the claim made by their road on the associate fund. Rewards and penalties are here set forth of the highest importance as securing care and proper equipment on every road of the association. Companies not meeting with any accidents will thus be absolute gainers, while those with whom they occur, not only lose the amount to which they are fined, but have an equal amount deducted from them in their share of general distribution.

It appears to me that, by these measures, based upon principles of life insurance, substantial justice is secured to every class. The parties most interested are those who travel, the proposed arrangements being mainly for their benefit; and as, in case of accident, not only will they be more speedily and efficiently attended to, but, as damages will be promptly paid without recourse to expensive litigation, they ought not to complain of the slight tax necessary to secure these objects. The whole measure, which is long, appears to be drawn up with great care and precision, and to be based upon the soundest calculations. For the sake of humanity, let us wish it success.

In view of the fact that the question of medical provision for railroads is about to come up before the Legislature of the State in a measure thus large and comprehensive, would it not be desirable that this society should take some action in the premises by a petition to the Legislature setting forth that, in the opinion of this body, great suffering is entailed and much loss of life and limb incurred by the want of medical provision calculated to secure more speedy and efficient attendance on persons injured by railroad accidents, and praying that the legislative body will either originate some measure or take into their earnest consideration such as may be brought before them bearing on the subject, in order that thereby the desired object of proper medical provision for railroads may be ultimately secured by such legislative enactments as in their wisdom may seem proper. I am not in the habit of drawing up petitions; but by such a one, you would, and none could do it with more propriety as representatives of the great medical body of the State, without interfering

with functions not properly belonging to you, be the first to step forward as promoters and pioneers of a great and humane movement.

In conclusion, when our object shall be finally attained, we have only to do our whole duty, leaving the rest in the hands of an all-wise overruling Providence. Successful, we shall carry joy into many a household that might otherwise have been made desolate : should it be differently ordered, though we fail to save life, we shall not fail to diminish suffering; the last moments of the unfortunate sufferer will not be embittered by unnecessary torture, and what can by possibility be avoided is unnecessary ; while to sorrowing and perhaps distant relatives there will be afforded the one source of consolation that all had been done by wise precautions and humane provision, as well as by practical sympathy and professional skill, that could reasonably be looked for in an enlightened and Christian community.

YONKERS, *February 1, 1862.*

Article 9. The synopsis of a case of Peritonitis occurring in a child, and the administration of enormous quantities of morphia in its treatment. By HENRY S. DOWNS, M. D., New York.

I was called December 13, 1862, to see J. L——, aged 10 years, and found her with extreme tenderness over the whole abdomen, more particularly the lower, midway between the umbilicus and pubis. The pain was severe and constant, the bowels rather constipated, and the pulse about ninety. She had been complaining for more than a week with griping in the bowels and dysenteric discharges of a slimy and bloody character. Some mild remedies had been administered for her relief; I directed a solution of morphine.

On the 14th, the abdomen was very hard and a little swollen, and she vomited occasionally.

On the 15th, vomiting had increased, and the pulse ranged from 90 to 100. Calomel and Dover's powder were directed every four hours.

On the 16th, the pain was incessant and extreme; a dose of oil produced mucous and bloody stools with very little fœcal matter; one-quarter of a grain of morphia combined with quinine, was prescribed every two hours.

On the 17th, six leeches were applied over the abdomen which bled freely. Although one-quarter of a grain of morphia was administered every hour, chloroform inhaled freely, alone seemed to give a moment's relief from the excruciating pain. Dr. Weeks was now called in consultation.

On the 18th she took half a grain of morphia every two or four hours, and six grains of calomel combined with morphia, in divided doses; also a large blister was applied extending over the whole region of the disease.

On the 19th the blister had drawn beautifully, and three or four grains of morphia were sprinkled over it every two or three hours; the gums were now becoming sore.

On the 20th the pain was more moderate.

On the 21st there was an exacerbation, and the pulse rose to 130. I directed four drops of the saturated tincture of *verat. viride*, every two hours.

On the 22d the pulse was reduced to 106, the tongue dry and dark, but the pain more severe.

On the 23d the morphia was increased to one grain at a dose every half hour or hour.

On the 24th, $3\frac{1}{2}$ drops of croton oil were administered in divided doses, which produced a free movement of the bowels and made her comparatively comfortable. She generally urinated freely after long intervals.

On the 25th, one grain of morphia was given every hour.

On the 26th she took 16 grains of morphia during 12 hours, which slightly relieved her.

On the 27th the seat of the most intense pain had risen to a point higher up, or a little above the umbilicus; she groaned almost constantly and rarely slept a moment; the pulse was 90.

One vial of McMunn's elixir of opium was given to her in seven hours, with no relief, followed by 12 grains of morphia in five hours thereafter, with some abatement of the symptoms, frequently giving two grains every half hour.

On the 28th, croton oil was directed, which produced slimy and bloody stools.

On the 29th there was some tympanitis.

On the 30th she remained under the influence of belladonna internally, and stramonium externally applied, a greater part of the day; the pulse mounted up to 144; she was nervous, delirious, and had violent spasms. After the inhalation of chloroform, she became composed and had a little sleep, but the pain which had abated, or of which she was unconscious, returned, and one grain of morphia was directed every half hour, and chloroform when required.

On the 31st the pulse was reduced to 100; there were grumous bloody discharges from the bowels, the abdomen was very tender, but not tympanitic, and vomiting was frequent.

1862—January 1. The patient is improving under morphia and chloroform.

January 6. The disease is progressing to a favorable termination although the stools continue of a muco-purulent and bloody character; she urinates freely and the appetite is restored.

To sum up the case, it will be seen, that the patient took during eleven days of the period of greatest suffering, 148 grains of morphia, one bottle of McMunn's elixir of opium, and half an ounce of Magendie's solution of morphia, besides the sprinkling of a scruple of morphia upon the blistered surface, and the administering of laudanum and opium in the form of enemas and suppositories. She also inhaled a considerable amount of chloroform.

According to the United States Dispensatory, one grain of morphia is equal to six grains of opium, and one grain of opium is equal to 25 drops of laudanum; therefore, 148 grains of morphia equals 888 grains of opium, or 22,200 drops of laudanum.

The greatest amount of morphia taken on any given day, was 28 grains; on one other day she took one bottle of McMunn's elixir of opium, and 24 grains of morphia. Although her mind appeared clear and rational during her sickness, with the exception of a few intervals, it is remarkable that since her recovery, she does not remember anything during the most severe part of her illness previous to January 1, not even the blister, which was about 6 inches by 10 in size, and remained perfectly raw for more than a week, could be brought to her recollection.

NOTE.—I am permitted to add the following from Dr. Weeks:

"On the 17th day of December, 1861, I was called to see the case of Peritonitis reported by Dr. Downs, in which an unprecedented quantity of the sulphate of morphine was administered without any decided effect; continued in attendance with him until the recovery of the patient, and most cheerfully corroborate his statement. The child not only took the quantity of sulph. morph. specified in said report, but retained it in her stomach, and there was not at any time the slightest symptom of narcotism produced.

CYRUS WEEKS, M. D., No. 436 Broome st."

Article 10. Cirrhosis of the Liver, Enlarged Spleen and Abnormal Distribution of the Vessels between it and the Stomach. By Dr. M. M. MARSH, of Onondaga Co., New York.

The motive in presenting this morbid specimen to the Society, is not the character, or extent, or termination of the disease, but the very unusual anatomical connection existing between the spleen and stomach.

The patient, J. S., aged twenty, had for the last three years been engaged in literary pursuits; was highly intelligent, and for the last three months employed in teaching. His habits were strictly temperate; countenance animated and florid; and though frail in form, in the possession of uniformly good health, with the exception of a slight chronic diarrhea, dating from a mild typhoid fever suffered two years previous. For a few weeks previous to his death, he had not exhibited his usual elasticity of feeling, which was however ascribed to the undue mental labor his duties imposed.

On the Tuesday previous to this meeting, I was called to see him. About eighteen hours previous he had been engaging violently in athletic sports, and soon thereafter vomited blood freely, and again, within the hour. He was then removed to his home, and all the blood afterwards vomited carefully preserved. Appropriate means were employed to arrest the hemorrhage—a horizontal position, external warmth, ice to mitigate the excessive thirst, and the exhibition of gallic acid and other remedies. All, however, seemed unavailing to control the hemorrhage, which regularly returned about every second hour, and without any previous sickness at the stomach. Instantly, he would turn his head to one side (for from the first he was prostrate and unable to rise or converse), and there would flow from the mouth, and without much effort, from one to one and one-half pints of unmixed florid blood. Nearly eighteen hours after the attack and vomiting, having occurred seven or eight times, I was called to the patient. I found him but partially conscious to objects; no

radial and but slight axillary pulsation; and presenting the aspect of one from whom life has just departed. In turning him to inspect the chest and abdomen, he again vomited nearly one pint of florid blood. The examination revealed simply an enlarged spleen. As he swallowed readily, thirty minims spirits terebinth were ordered, in a solution of starch, every half hour, until taken five times. In the interim, vomiting recurred once and ceased altogether, and as was supposed from the supply failing, and not from the remedies employed. An enema containing tannic acid was ordered, to prevent further exhaustion from evacuation of the bowels. After a few hours, a very feeble pulsation returned to the wrist; he appeared to comprehend circumstances, but manifested no desire except for drinks, as his thirst was intolerable. He continued in this semi-lifeless condition from Thursday to Sunday P. M., with the lower limbs apparently destitute of circulation, and cold, except from external warmth; the pulse at the wrist at times scarcely perceptible; and except when tormented by thirst, presenting more the appearance of the cadaver than the living subject.

On the evening of Sunday, the bowels were suddenly and copiously evacuated, and repeated within twenty minutes from the first, without apparent consciousness of the patient. The evacuations consisting almost entirely of coagulated blood. Between two and three hours from the first evacuation, the patient looking anxiously toward a wash bowl, it was passed, and he vomited one and one-half pints of pure blood, and shortly expired.

I ought to have stated, that after the cessation of vomiting, the serous portion was nearly all poured from the vessel in which the separate quantities of blood had been preserved, (except the first two times, which occurred before he was taken to his home), and the remaining portion of blood carefully measured, amounting to nine pints and four ounces. An autopsy was held twelve hours subsequent. The cranium was not opened; the lungs normal; the heart, in size, consistence and aspect, healthy; its right side empty; the left ventricle containing nearly four drachms of material, resembling finely comminuted coffee grounds. The ascending aorta, normal, but its descending portion, near the diaphragm, beginning gradually to expand, and which expansion continued through the entire abdominal portion; and near the splenic artery its diameter was at least one-fourth greater than

the superior thoracic portion. The aorta throughout its whole extent, but especially the portion between the diaphragm and splenic artery, was softened; it could be torn by the fingers; but under the microscope, presented no atheromatous deposit. The intestines, except the lower third of the duodenum, which was too much softened to admit removal, were healthy. The bladder exhibited its usual appearance; also, the right kidney; the left, simply hypertrophied, otherwise normal. The other organs of the abdomen, as they here present. The liver, bi-lobed, and so completely cirrhotic, that within or on its surface, not three lines of normal structure anywhere occurred between the nodules. The circulation through the viscus appears to have been nearly obstructed; and still the gall-bladder filled with apparently healthy bile. This viscus is less than the natural size; its weight three pounds and seven ounces. The splenic artery so dilated, that the thumb is easily admitted one-fourth its length from its distribution, it sends a branch to an exact duplicate spleen, and about the size of the healthy organ; which is suspended from the upper and large spleen by membrane, as the liver is suspended from the diaphragm. The weight of the superior spleen is fifty-eight ounces; healthy in appearance, and sending in the place of the usual distribution, two parallel vessels to the stomach; each, with a diameter equal to the enlarged splenic-artery, and readily admitting the thumb; and apparently penetrating the coats of the stomach. These vessels have so softened, that a dissection of them could not be made; but on opening the stomach (which in all respects appeared healthy) opposite the connection of these vessels with that organ, its mucous and a portion of its muscular coats were ruptured; which, on being washed, exhibited torn muscular fibre, for more than one inch in extent, and entirely between the connection of these vessels with the stomach; its peritoneal coat was entire.

You have here the condition of things after careful dissection. The case presents points of remarkable interest:

First.—During life, the liver presented no evidence of diseased structure or function.

Second.—Softening of a portion of the arterial system without observable fatty degeneration.

Third.—Though the spleen varies very much in form and size, I have not noticed any record of absolutely duplicate *spleen*, and attached by membrane to the parent body; and

Fourth.—The very unusual, and as far as my knowledge extends, unknown fact, of two immense vessels in place of the vasa brevia.

There are other points of perhaps minor interest. During the autopsy, no blood, and scarcely any liquid was observed. Doubtless a portion of the blood vomited just before death, was elaborated during the four days, in which no vomiting occurred; and during which, very little could have been requisite for the various secretions: for they were practically nothing. The blood previously lost, and which must have represented nearly the amount of circulating fluid, at any one time, could not have been less than thirteen pounds; including that portion discharged subsequently from the bowels. The patient weighed 126 pounds.

The question arises; why this regularity in vomiting; and whence the blood? If from the two vessels mentioned, acting as conduits, what their distribution relative to the different coats of the stomach; and the anatomical condition of their extremities previous to the fatal attack? And in what consisted the immediate lesion, leading to the fatal issue?

Article 11. A protracted case of lameness. By Dr. HIRAM CORLISS, of Washington Co., N. Y.

The subject of this case first strained his ankle when eighteen years of age. Recovered from this after a few weeks, and remained well until at the age of twenty-one, when again strained the ankle. This was in the year 1851, the subject of this statement being then a student in one of our Eastern colleges. This latter sprain, which occurred in the summer of 1851, did not cease to be troublesome until the spring of 1852.

In May of that year, the attention of the patient was directed to a slight pain *underneath the patella of the left knee*, produced in walking, and continuing only while using the limb in this movement. Deeming the pain of little consequence, the usual exercise in walking was continued, and the next morning the knee was found much swollen, both above and below the joint, connected with inflammation. This lameness continued in about the same condition for more than a year.

Chief treatment in the meantime being *application of iodine, blistering, bandaging, and pouring with cold water*. Of course used at different periods of the interval. In the spring and summer of 1853, the limb recovered without the patient being able to say *what* specific treatment was the direct cause.

During the ensuing fall, the patient had a severe sickness from typhoid fever. Recovering, he entered upon his studies at New York, being compelled daily to climb several flights of stairs. About two months after this recommencement of student life, the old difficulty of the left knee returned, and now accompanied by a *dull, heavy pain* in the lower part of the spine. Relinquished books for one year, trying various remedies in addition to those previously employed. Took a sea-fishing trip of a month.—Succeeded in removing pain from back, but not in materially improving lameness. In the fall of 1854 commenced teaching. Lameness continued until the summer of 1855, when again it disappeared and the knee gradually recovered its strength.

In the winter of 1856, while teaching in a large boarding school, the *right knee*, previously wholly unaffected, became painful and swollen in the same manner as the left knee had first been attacked. In the ensuing summer this knee recovered its healthy tone and usual strength. For the two succeeding years, suffered from no returning attack, although still engaged in teaching. Had now, however, left the boarding school for a day school.

In the spring of 1859, engaged again as teacher in a large boarding school, and six weeks after commencing duties the *left knee* again became lame, swollen as at first, and two weeks after, the right knee also. Together with this double return of lameness, the pain in the lower part of the back returned. The next year was spent in efforts to recruit general health, together with special applications to the knees. In the spring of 1860, the *right knee* recovered and in the summer the *left knee* also commenced to improve, and the latter has continued to improve until the present time. But in the fall of 1860, the *right knee* again became affected and has continued so until the present time, in the meantime having several periods of rallying and relapsing. It is now in a rallying period.

Each knee is somewhat altered in form by depositions around the joint. No pain is, or has ever been, experienced, excepting when using the limbs affected.

Temperament of the patient, nervo-sanguine. Habits temperate, using no stimulant drinks, and indulging in no debilitating vices. General health, aside from causes of exhaustion previously mentioned, *always good. Sleep well and digest well.*—Unusually careful in observing all known hygienic laws. *Never has the blues.*

Blistering and *rest*, have generally seemed to operate *favorably* upon the *left knee*, but *unfavorably* upon the *right knee*. Application of muriate of ammonia, temporarily reduces the suffusion, but has no permanent effect. *Iodine, cupping, leeching, poulticing, liniments, seton*, all have been tried without benefit, and in some cases with injury.

Article 12. Dysentery, Peritonitis, Suppuration, Spontaneous Opening at Umbilicus, Discharge of Pus in large quantities, Recovery. By T. C. FINNELL, M. D., New York, Surgeon to St. Vincent Hospital.

Maria Killian, aged nine years, residing at 127 East 11th st., was taken ill with symptoms of dysentery, on the 15th September, 1861. She had been suffering from constipation for several days preceding the attack; she was under treatment four days before my first visit; her medical attendant had prescribed the usual remedies employed in dysentery without much benefit; small doses of morphine were recommended to be given every two hours until the following morning.

September 16, much improved, less vomiting, pulse 100, heat of skin and thirst much abated.

September 20, the child's condition much better.

September 26th, all signs of dysentery passed away; no pain or tenderness on pressing the abdomen; the child expressed a desire for food; sits up in bed and is rapidly improving.

October 1; symptoms of acute peritonitis have appeared; tenderness over the abdomen, tympanitic distension, high fever, and great thirst.

October 5; peritonitis subsiding, and percussion shows the presence of a quantity of fluid in the peritoneal sac.

October 10; the fluid increasing in quantity; the child complains very little; the tongue clean, pulse 100, bowels regular, some difficulty in breathing owing to the distended abdomen. The question of tapping was now considered, and it was determined to wait until symptoms were more urgent.

October 13; umbilicus red, swollen, and about to give way; very little change in the condition of things for several days.

November 3; spontaneous opening at umbilicus and discharge of four pounds of pus. No collapse or other unpleasant symptoms followed the discharge of so large a quantity of matter. The child is cheerful and is much relieved since the opening took

place ; the pus was free from odor, yellow, and of the consistency of cream.

Day by day the discharge is diminishing, and on the 30th of December, the opening has closed. The child so far recovered as to be out every day.

February 1, 1862; the child presents the appearance of being well; a small cicatrix marks the point where the spontaneous opening occurred.

**Article 13. Malignant Pustule in the United States. By
A. N. BELL, A. M., M. D., Physician to Brooklyn City
Hospital, Member of Kings Co. Medical Society.**

(Communicated by the Kings County Medical Society.)

Malignant pustule is a specific disease, essentially septic and gangrenous, confined in its beginning to the cutaneous tissue and generally to those parts of the surface that are habitually uncovered, and caused by animal poison.

As my chief purpose is to treat of malignant pustule in the United States, I shall give only so much of the history and the nature of this disease derived from other sources as may be necessary to the elucidation of my subject. Celsus and Paulus Ægineta both described malignant pustule under the head of carbuncle. Ambroise Paré, in the sixteenth century distinguished it from plague. Yet it was not until the latter part of the eighteenth century that physicians began to appreciate its nature. Thomassin, Boyer, Fournier, Montfils, Veson, Lance-rotte, Chambon, and especially Enaux and Chaussier contributed to make the medical world acquainted with the nature of the malignant pustule. During the present century, Bayle, Bidault, Villiers, Reynier, Rayer, Branell, Wagner, Raimbert, Manoury and Salmon, and recently Gaujot and Bourgeois, have given valuable monographs and cases illustrative of epidemics.

It is the general conclusion of persons who have had the best opportunities for investigating the nature of malignant pustule, that the germ of the disease consists in an animal poison, usually contracted by man from cattle or their remains. In support of this view it is found that as a general rule, the disease most frequently occurs among knackers, tanners, veterinarians, persons engaged in the removal of offal, and stevedores, particularly those employed in handling hides from certain districts and countries where the diseases of cattle most prevail. In other cases it has been attributed to eating diseased animal food.

Certain herbivorous animals, especially beasts of pasture, are subject to a disease called malignant carbuncle, characterized by

the occurrence of a large uncircumscribed emphysematous tumor, which yields to pressure and crepitates under the fingers, and exhales a peculiar putrid odor. In its progress it turns black in the centre and appears as if burned or charred; it is infiltrated with a yellowish colored fluid and distended with a fetid gas. This disease is capable of being transmitted from one animal to another by inoculation, and by absorption to man, in whom it runs a violent and dangerous course. MM. Salmon and Manoury, of France, have vainly attempted to limit the term malignant pustule to this disease only. Other and later writers, with greater opportunities, have demonstrated that malignant carbuncle and other ulcers which occur in cattle are the eruptive symptoms of grave febrile disorders depending upon a diseased state of the blood, and always consecutive to febrile symptoms; and the inoculation of man with matter from such an ulcer is only equally dangerous with the blood, and possibly the milk of the same animal in the febrile state before the ulcer appeared. Indeed cases have occurred where the blood of animals not previously known to have been diseased has caused malignant pustule in man by absorption. It is well known that the milk and even the butter, as well as the flesh of cows affected with the *trembles* is poisonous to man, and has been the cause of many deaths in the Western States. And Professor Drake, in his Memoir of the Trembles, also traces several deaths from this disease to absorption in flaying and trying out the tallow of cattle that had died of it. But on the other hand there are many examples produced by French writers, of persons who have eaten of the flesh of animals that have died of malignant carbuncle who have not contracted the disease. In a few rare instances, intestinal or pulmonary absorption has appeared to have given rise to *fièvre charbonneux*, and the subsequent appearance of the pustule externally. But such cases are extremely rare and exceptional. Maurand (Histoire d'une Maladie tres singulière, &c., in Hist. de l'Acad. des Sciences, 1766, i, p. 97), relates some cases of malignant pustule produced by the flesh or blood of over driven cattle, although their bodies presented no appearance of disease. It would appear that the flesh of such animals may be eaten with impunity when cooked, but that if the blood or raw flesh be applied to the wounded skin or even to the unbroken skin in some cases, diffuse cellular inflammation is excited or malignant pustule produced, which frequently terminates fatally; and M. Du-

puy states (*Revue Médicale*, 1827, ii, p. 488), that the malignant pustule or carbuncle of cattle may be produced by applying to a wound *the blood of an animal that has died of gangrene of the lungs.*

It is the opinion of some observers that malignant pustule may occur spontaneously without any contact with poisonous animal matter. But from the fact that diseased animal matter is known to cause the great majority of cases, many ways will suggest themselves by which inoculation might take place without any knowledge of the circumstance on the part of the person affected.

A favorite dog or cat (animals not subject to the disease) might easily transport it; a butcher's knife or hook might convey the poison from diseased to otherwise healthy meat; or even a fly might carry on its tiny feet all that is necessary for a fatal inoculation.

As a general rule, cattle which feed on prairie meadows are exempt from malignant disease; while those which are fed upon dried clover, lucerne and vetch, are peculiarly liable to carbuncle. The same may be said of cattle fed upon semi-decomposed grain, the refuse of distilleries and breweries. All such things are actively predisposing agents to the blood diseases of cattle, and indirectly liable to engender malignant pustule in man.

The earliest record of malignant pustule in the United States, I have met with, is by Dr. C. W. Pennock, in 1836 (*American Journal of Medical Sciences*, vol. xix). Dr. Pennock published four cases, with two plates, and records that in 1834, an epizootic of *murrain* prevailed in the vicinity of Philadelphia, which was very fatal. It finally extended to the city, and especially prevailed among the cattle that fed on the commons. Several persons who had been engaged in skinning animals that had died of murrain were affected with malignant pustule. One patient who came under Dr. Pennock's care, September 2, 1834, stated that while skinning a cow dead of murrain, a musquito bit him on the back of the hand. With the other hand which was covered with the blood of the cow, he brushed away the musquito and rubbed the itching bite. "Four days afterwards, a vesicle of the size of a large pea, distended by red serosity, accompanied by a slight itching, but no pain, was observed on this spot, his general health was not then affected. On September 8, six days after the inoculation of the virus, the vesicle had increased to the size of a five cent piece, was of a purple color, the itching

became intolerable, the patient ruptured it by scratching, and a small quantity of red serum was discharged. Next day the vesicle was much enlarged, and numerous small vesicles appeared around it. On the 10th, it became black and depressed in the centre, borders elevated, soft, and of a dark red or purple color. Next day the central dark point had increased to one-third of an inch in diameter; patient experienced langor, chilliness, want of appetite, and was obliged to discontinue work; thumb and hand were then swollen, the absorbents red and painful, and the lymphatic glands at the elbow-joint and armpit much enlarged.

September 12—On the middle portion of the back of the thumb of the left hand, is a circular spot three-fourths of an inch in diameter, of a deep purple color, depressed in the centre, elevated on the borders; surface indurated, except at the circumference; perfectly devoid of sensibility, and surrounded by vesicles containing dark red serosity. The thumb, hand, and forearm swollen, of a rose color; the absorbents marked in their course by red lines extending to the armpit, are hard and painful; a lymphatic gland of the size of a pigeon's egg is seen immediately above the elbow, and four smaller in the axilla; pain felt in the entire limb, and is much aggravated by movement. No pain in the head; intelligence perfect; sensibility unimpaired, except in and around the pustule; tongue coated in the centre with light fur; thirst; no pain upon pressure of abdomen; no nausea; constipation; surface of body dry and hot; pulse 90, of good volume; no other symptoms worthy of remark.

Treatment.—Cauterization of pustule and borders with lunar caustic, followed by application of poultice made of lye and rye flour. Saturnine lotions to the rest of the arm; sulphomagnes, one ounce.

13th—No symptoms of fever; bowels open; the eschar of pustule firm, and resembles soaked and blackened leather; erysipelatous redness and pain of the arm much diminished.

The subsequent treatment of the arm was altogether local; sponging the arm with saturnine lotions, and the frequent application of alkaline poultices to the seat of the pustule. The erysipelatous inflammation disappeared in four days, the lymphatic glandular induration in a week, after which he resumed his usual occupation."

Other cases occurred that could be traced with almost equal accuracy, though the person affected could not account for the

means of absorption. "At periods varying from three to eight days after contact with the dead bodies of the animal, a vesicle of the size of a grain of millet appeared on the point of inoculation, without having been preceded either by heat, prurience or tension. This vesicle gradually augmented; was attended by a sensation of itching, but no pain; its color was dark brown or livid; broke, either spontaneously or by rubbing, and discharged a few drops of serosity. This period of the disease occupied from twenty-four to forty-eight hours." The succeeding stages of the disease—the formation of a central tubercle, gangrene and sloughing—were of irregular duration, sometimes being merged into each other, and varying from a few hours to several days.

The next particular account of malignant pustule to be found in American medical literature, is by Dr. William M. Carpenter, of Jackson, Louisiana. Dr. Carpenter's essay was first published as a *Thesis* in 1836, and subsequently in the *Southern Medical Journal* for 1839. Besides giving a full account of eight cases, from a large number which fell under his observation, the first one occurring on the 20th of August, 1835, he gives a history of the disease in that section of the country extending back to the time of its first settlement by the French. According to this account, malignant pustule seems to have been first noticed in this country, among the deer feeding on the salt marshes near the sea, west of the mouth of the Mississippi river. It afterwards attacked the cattle of the planters on Bayou Lafourche, returning annually, and gradually extending its ravages over those districts in which the benefits of grazing had been appreciated and turned to account by the intelligent and enterprising farmer. "This disease," writes Dr. Carpenter, "though it appears to have been of comparatively early occurrence in this region, is now (1839) seen in nearly every part of the State, seems not to have been even noticed in the medical annals of America." Dr. Carpenter fully endorses the usually entertained French view as to the causes of malignant pustule—that it is never spontaneously developed in man, that it is generally a purely local disease in its beginning, appearing in the majority of cases to have a local and external cause, as the contact of substances that have been impregnated with the virus arising from carbunculous diseases, or from touching a part that is the seat of malignant pustule. The chief agents however, of communication, are probably flies,

which have fed upon the carcasses of animals dead of *charbon*. "There are," he remarks, "many well attested cases of the disease having occurred after the bite of these carnivorous flies, which have led many to suppose that it was a peculiar insect whose sting or bite produced the disease, whereas, they only inoculated it from other animals." "There is no predisposition, nor is the supposition of the existence of predisposing causes warranted, for whenever inoculation is effected in man, the disease will occur independently of idiosyncrasy or predisposing causes." His conclusions are that "the disease is essentially gangrenous from the commencement, that is, that there is gangrene before the phytænæ make their appearance, and that these vesicles are the result instead of the forerunners of the gangrene. The consequence of this is, that any attempt to bring about resolution must fail, as there will necessarily be a slough of this gangrenous part, which will be smaller the earlier a line of demarcation is established between this and the sound parts."

With the exception of a single case published in the New Orleans Medical Journal, by Dr. S. B. Wilkinson, we have no other record of the disease in that region until 1850. In the New Orleans Medical Journal for 1851, Dr. Jno. H. Baldrige gives an account of a *new* epidemic in the same section, which, he states was like that described in the first book of Homer's Iliad—made its first assault upon mules—

"On mules and dogs the infection first began,
And last the vengeful arrows fixed on man."

"Some of our planters," Dr. Baldrige writes, "have lost several thousand dollars worth of horses and mules, and an immense number of cattle. Hogs that eat of the dead carcasses soon die of the malignant pustule. Dogs meet with the same fate. It is generally thought that a good rain will check the disease. Planters generally treat it, when observed early, by cutting freely into the tumor, and filling up the wound with a mixture of equal parts of *soft soap and quick lime*. Several cases have been communicated to man by the bite of flies."

The earliest account of its occurrence in the northern portion of the United States, was in 1842, yet this account was not published until 1859. In the Boston Medical and Surgical Journal for 1859, Dr. Samuel B. Wells, of Middleborough, Schoharie county, New York, reports a case to which he was called in the

practice of Dr. Peter S. Swart, in the village of Schoharie in 1842. Dr. Wells' description of this case accords with the description of Bourgeois and other late authorities. In the same paper, Dr. Wells reports seven other cases that had fallen under his notice since 1855. Dr. Frank H. Hamilton has recently informed me that he was also called to see two cases, and heard of some others in the vicinity of Buffalo, about the year 1842. These cases occurred during the prevalence of murrain among cattle in the same region at the time, and they were regarded as true malignant pustule. To the best of his recollection all the cases he heard of proved fatal.

In the Boston Medical and Surgical Journal for 1852, Dr. Pierson of Salem, Mass., reports several cases, and among the rest, in detail the case of the Hon. Robert Rantoul, whose disease was at first thought to be erysipelas. The pustule in this case was situated on the forehead, and was not traceable; but from its perfect analogy with subsequent cases that were traceable to inoculation with dead animal matter (hides). Dr. Pierson considered that it was a true case.

In the New York Journal of Medicine for 1854, Dr. Willard Parker of New York, reports four cases of "*a peculiar form of malignant inflammation of the lips and face, resembling malignant pustule.*" Case 3, may be taken as a type of the whole.

"Mr. W. aet. 26, married, furniture dealer, of good habits, and hitherto perfect health, discovered a small pustule on the under lip, near the right angle of the mouth, on the 2d of April. It was tender on pressure, and had a hard base, but attracted no attention. During the night the disease extended considerably, involving the whole lip and the right side of the face in a hard, livid and painful swelling. On the evening of the second day his physician first saw him, and found the lip greatly swollen, of a livid color, and the seat of burning pain. He scarified the parts for the purpose of local depletion, and also applied leeches. The swelling continued to extend, involving the right side of the neck and face to a great extent. I saw him on the 7th, at 11 o'clock A. M. His symptoms were then most unfavorable, pulse 130 per minute, intermittent every seventh or eighth beat, weak and small; respiration rapid, moaning; skin warm and moist; urine free; pupils much dilated; mind clear. He complained of oppression about the chest, and had not been able to obtain sleep. Both lips were involved in the swelling, were hard, livid,

and insensible; the whole side of the face and neck was similarly affected, the eye being nearly closed. The frontal vein was livid, red, and prominent, and the veins of the cheek were also visible, as if distended. The treatment consisted of deep scarifications of the lips, and yeast poultices to the part, with anodynes and stimulants. I visited him again at 6 o'clock P. M., and found him rapidly failing; treatment of no service. He died the same evening."

Dr. Parker states that the object of his communication in reporting these cases, was to call special attention to this disease, which from the *frequency of its occurrence* in his own practice, and other cases which had been related to him, seemed to be *very prevalent*. Although Dr. Parker's description and treatment of the disease which he reports, accords with that which is given by French surgeons who have written upon malignant pustule, he nevertheless concludes, that "it differs from true malignant pustule, to which in its origin it seems allied by attacking persons who have not been affected by poisonous wounds, or who have been liable to the introduction of animal poisons into the system."

In a report of the proceedings of the *New York Medical and Surgical Society*, to be found in the *New York Journal of Medicine* for 1859, Dr. John Watson relates the case of a young English woman, who was suffering from one of those "*virulent pustules*" on the face, commonly called malignant pustules. "Three or four days before she had observed a small and slightly painful pimple upon the upper lip, which she had pricked with a needle. This seemed to aggravate it, and when the part was somewhat swollen, she had gone to a neighboring apothecary, who had with a lancet scarified the mucous membrane of the lip. When Dr. Watson saw her there was considerable tumefaction about the part, extending to the angle of the lip and upwards towards the eye for two or three inches. The mucous membrane was corrugated, swollen and nodulated, the pulse 120 to the minute, the tongue coated, and the swollen part quite painful. He now thought of making a free incision into it, but as it appeared to him that no sufficient indication existed for so doing, he ordered an evaporating lotion for the cheek, and gave internally spirits of mindereri and solution of morphia.

This treatment was kept up for two days, with the result of producing diaphoresis and some sleep. At the end of forty-eight

hours, during which little change had occurred in the inflamed spot, he found, on everting the lip, points like detached pustules, similar to those showing themselves in anthrax when about to break. He now made a free incision into the lip, which gave exit to blood and matter. The next day the pulse was higher, but she was evidently better, and in a week convalescence was fully established. The incision was undoubtedly of great benefit to her. This disease, he remarked, has not as yet been fully and accurately described; resembling anthrax in many respects, and the real *pustule maligne* in others, it differs in many particulars from both, and should not be confounded with them in description. The disease generally appears about the face, near the mouth, and is often fatal, and had been so in three cases which he had seen."

"Dr. Parker agreed with Dr. Watson as to the essential difference between this species of virulent pustule and the *pustule maligne* of the French writers. It occurs, he believed, in the same persons and diseases in which we most commonly meet with paronychiæ, anthrax and furuncle, to all of which it bears some resemblance."

"Dr. Post regarded it as very similar to carbuncle, from which it differs only in the fact that it occurs in loose cellular tissues; he had seen the bite of a spider cause very much the same kind of inflammation, which was followed by gangrene."

"Dr. Buck had had in his practice four cases of *pustule maligne*, of which three had died. Two had shown themselves on the upper lip and cheek, one on the chin and lower lip, and one on the cheek near the mouth. The disease partakes, he thought, of anthrax and erysipelas, and the pustules mentioned in Dr. Watson's case often show themselves at the place where the inflammation makes an apparent effort to point and discharge. The swollen part, however, is tawny and shining, not bright like erysipelas."

"Dr. Van Buren had a case in a young married lady, which, commencing in a small pimple on the lower lip, ran a very rapid course and destroyed life in forty-eight hours after he saw her."

By the Providence Journal of Feb. 4, 1859, we learn that three deaths had recently occurred in the city of Providence, from malignant pustule. The alarm caused thereby, among those who considered the disease a "new" and "strange" one, induced Dr. E. M. Snow, of the city of Providence, to give the following brief

description of the disease, in the paper referred to, in order, if possible, to prevent unnecessary alarm: "The pustule, unless it arises from inoculation, is generally on the *under* lip. It commences with a slight pimple and with considerable itching. Very soon a thin bloody fluid is found in the pimple, and it is surrounded with a livid or purple areola or ring. It also rests upon a hard base which may be felt as a small lump under the skin; but has very little, if any pain. Unless arrested early, the swelling rapidly increases, poisonous pus is formed, and being absorbed, passes into the blood and poisons the whole system. It is not necessary to describe the further progress of the disease, or its treatment. Our only object is to enable others to recognize it in its earliest stages, and also to prevent unnecessary alarm from common pimples which occur so frequently."

About this same period of time, a case occurred in my own practice in this city, a brief abstract of which may be found in the published Transactions of the Society.* I was sent for to see Mrs. R., February 6, 1859, a married lady, aet. 34, with a nursing child. She had never been very robust, but enjoyed tolerably good health. I found her complaining of general *malaise*, and of a hard livid pimple at the vermillion border of the left upper lip, near the corner of the mouth. This however, she said, was better; that it had itched a good deal at first and was very painful, but since the pain had subsided, she thought it was only a boil, and that it would soon be well. Her attention was first called to it two days before, as a dark, red pimple, on account of its incessant itching. The centre was of a dark, purple color, denuded of cuticle and exuding a thin, dark serum. Her carelessness about it, however, tended to divert my own attention, and I failed to discover at that time the relation of the "pimple" to her irritable, feeble pulse, 112 per minute, white furred tongue, with elongated papillæ, anorexia and failing strength. Her bowels had not been open for the last two days, "yet she had eaten nothing." She complained of slight flatulence, but would not have thought of it without inquiry. She scarcely had any milk for the baby (five months old), and had to feed it. For the last two nights she had been very restless, felt too tired to be up, and no better for lying down. I prescribed the tincture of rhubarb, half an ounce, immediately (12 o'clock M.), and the same dose to be repeated at bed time, if necessary. Directed a bread poultice to be put to the lip, and for her to take any simple food

* Kings County Medical Society.

she could, with tea: and that she should not attempt to nurse the child. The next day, the pimple had extended considerably in circumference—extending across the lip and involving the right alæ nasi. The lip was also much thickened, and exceedingly hard. The centre of the swelling was now dry, and a little depressed. The whole was surrounded by an areola, similar to a vaccinia of the tenth or eleventh day. She had taken the second dose of rhubarb, since which her bowels had been freely open once, at which time she fainted away; this was followed by sick stomach, and the ejection of a cup of tea which she had taken a short time before. Her condition was in no respect better, and her present appearance—with reflection on her case for twenty-four hours—left no doubt in my mind that I had to deal with malignant pustule. I incised the lip freely from the under side, expecting to relieve the tension by the flow of blood, but in this I was disappointed. The tissue cut more like frozen flesh than anything I can liken it to, and the only blood that followed was a little from the capillaries of the surface. I applied lunar caustic to the divided portion, and freely over and around the swelling. Directed a flax seed meal poultice, and prescribed a capsule containing two and a half grains each of the sulphate of quinia and camphor, and the sixth of a grain of the acetate of morphia, to be given every three hours; rum punch and beef tea as much as she could be induced to take.

Third day.—The disease has progressed more rapidly than during the twenty-four last preceding. It now involves whole of upper lip and extends up to the right cheek, the areola proportionately expanded; no appearance of suppuration in the divided portion; the centre is gangrenous with margin gradually extending and disappearing in the hardened circumference; patient is weaker, takes medicine regularly, and a little punch and beef tea every two or three hours, apparently to gratify her attendants; appears perfectly passive; complains of nothing but extreme lassitude and inability to rest; skin hot, pulse 120, and a little harder; I again scarified the tumor through the gangrenous portion on the cutaneous surface, and applied caustic as on the day before; ordered yeast to be mixed with the flax seed meal for poultice; the same remedies to be continued internally, and the bowels to be opened by a soapsuds enema.

Fourth day.—No abatement; but on the contrary, the disease still extending; now up to margin of right orbit, loose tissue

round right eye infiltrated with serum, and eye closed; the left eye however, remains uncomplicated, and the pustule has not extended in that direction; pulse the same in frequency, but more feeble; tongue dry and brown; has taken a little more food on account of thirst, but does not seem to think enough of anything to ask for it; says she is going to die; continued same treatment.

Fifth day.—The circumference of the pustule seems not to have extended, but the hardness has, as also the gangrene; there is still no suppuration; pulse more contracted and irregular in force; and, although on account of thirst she has taken more than half a pint of rum and nearly as much wine during the last twenty-four hours, it seems to have had no effect whatever; she has also taken about a pint of beef tea.

Sixth day.—She loathes food, and takes her medicine with great reluctance; the tumor has changed but little in its appearance since yesterday; the gangrenous portion is breaking down, but there is no appearance of pus.

Seventh day. Mind is wandering; pulse 130, irregular and very small; skin hot, tongue dark brown and dry; still takes a little fluid, but frequently ejects it; she gradually sunk into a low delirium, and died on the morning of the eighth day. Nothing that was done for her seemed to have the slightest influence over the straight forward fatal tendency of the disease.

In the transactions of the society for the following July, Dr. Enos reported the following case:

Mr. L——, aged 18, of previous good health and habits but strumous parentage, his father having died of consumption; was taken ill on Wednesday, July 22, 1859; a little pimple appeared on the chin just below the right angle of the mouth; it began to swell, and the swelling extended to the whole lower lip; he was a little chilly and felt depressed; on Sunday he called at the office of Dr. Kelly, who saw and recognized the difficulty and prescribed for him; applied a poultice to the part; the pimple or little boil, began to discharge a little pus; the lip had discolored blisters on its vermillion border; I saw him in consultation with Dr. K. first on Monday evening; the lower lip was immense, and the swelling had extended down over the chin and out upon the left cheek; was firm and brawny to the feel, and of a dingy hue; the mucous membrane was sloughing from between the lip and gums; the pulse was rapid and weak, 120 to 128;

several little apertures were seen on the lip; we divided it freely from below the vermilion border through its entire substance, to the apex of the chin; it bled, but discharged no pus; the tissues did not retract and the cut sides were in contact; we gave him sulph. quinia, gr. ii, every four hours, and intermediately ten drops of muriated tincture of iron, milk punch, wine, whey, and beef tea, and a pulv. Doveri at night; he was very anxious about himself, apprehending a fatal result; Tuesday morning no better; on removing the yeast and flaxseed poultice which we had applied to the part, the skin had united so that it required some force to open the wound; the right half of the lip looked a little better and the pustule also; swelling less, and on pressure, a little white matter could be forced from several openings in the lip; the swelling, however, had extended on the left cheek and down the neck; was hard and more livid; we extended the incision through the border of the lip, put a tent in the wound and reapplied the poultice; treatment continued; had considerable pain in his bowels so that opiates had to be given; his bowels had been freely evacuated by blue pills and oil.

Wednesday, 8 o'clock, A. M.—Had slept but little; *face more livid*, pulse 130. *5, P. M.*—Sinking; lip cool; pus oozes from several points on the lip, no pus from the incision; did not deem it best to cut more. Prof. Parker saw him at 8 o'clock in the evening. He advised, though rather reluctantly, making two free incisions in the cheek, which I did, one four and the other three and a half inches long, through the skin and cellular tissue. He supposed we should find pus, but none followed the knife. They bled more freely than the first incision; but blood was dark. He advised the continuance of the same medication, but the patient gradually sank and died the next day at 2, P. M."

In the discussion of this case by the members of the society present at the time it was reported, it was elicited that malignant pustule appears to be a recent disease in Brooklyn; several cases having occurred within the last three or four years, while no one present recollected any cases as having occurred here at an earlier period. Dr. Cullen stated that he had had three cases. And that having seen many cases of the same disease as an epidemic in Mexico, he regarded it as true malignant pustule. He also mentioned that he had never known a case where pain in the abdomen or chest did not occur in the course of the disease.

At the meeting of the society for December, (1859,) three additional cases were reported, all of whom recovered; one by myself, on the back of the hand, and two by Dr. Isaacs, on the face. These, I believe are all the cases that have been reported in the Transactions of the Society. During the same year, however, (1859) in the month of August, I saw another case in the practice of Dr. Alexander Cochran. This occurred in a stevedore, who had been recently handling hides from South America. According to Dr. Cochran's account of it: "The pustule commenced as a very small vesicle on the right wrist anteriorly. It progressed rapidly and gave him great pain. A physician was called, who thinking the disease to be erysipelas, ordered the application of twenty-four leeches, to be followed by a poultice of cow manure." Dr. Cochran "saw the patient about twelve hours afterwards, and found him delirious; arm much swollen, and gangrenous from the shoulder to the tips of the fingers—the axilla of the same side threatened with gangrene. Pulse 100, skin hot; tongue brown, and secretions checked. Had the arm well cleansed with tepid water, ordered a yeast poultice and stimulants, with quinine and iron internally." I saw this case with Dr. Cochran in the fourth week of its existence. The whole cutaneous and cellular tissue of the anterior portion of the forearm had sloughed away; the muscles, vessels, and nerves being completely disintegrated. Above the elbow the same condition existed for at least half of the superficial surface. This patient ultimately recovered. But the sloughing was so extensive, that the part was not healed over until the twenty-first of October—it having commenced on the third of August.

Another case occurred in my practice in March last; the pustule being on the upper lip. This patient recovered. I have recently seen another case in the practice of Dr. D. E. Kissam. Mrs. W., aet. 61, the mother of several children, having always enjoyed good health. On the 16th of December last, she sent for Dr. Kissam, who being laid up with a boil, requested me to see her for him. I found her in bed complaining of general indisposition, and particularly of a painful swelling on the back of the right forearm, midway between the wrist and elbow. The space complained of was half as large over as the hand, swollen and of a dark, red color. It had itched and smarted a good deal, and she had laid over it the night before a cloth wet with the tincture of arnica. This however increased the smarting, pro-

bably in consequence of the broken cuticle by rubbing, and she was obliged to remove it. The whole swollen surface was stained with the arnica, but of darker color over the centre, and exceedingly tender. She had first noticed the swelling two days before, and feeling rather unwell, had taken a dose of castor oil, which, although it had operated, had failed to relieve her. She had scarcely slept any for two nights; was now irritable and shivery on exposure; had no appetite; tongue covered with white fur; skin hot; pulse 100. Prescribed a flax seed poultice to arm, and as her bowels did not appear to have been sufficiently open, citrate of magnesia to be taken in small quantities during the day, as a febrifuge aperient; and a mixture of squills, compound solution of opium and the spirits of mindereri, at night. On the next day, found that although the swelling had not increased, it was of darker color, and over the centre there was a purple spot, as large as a dime, nodulated and vesicular. She had rested but little, and loathed food; bowels had been open once; tongue more thickly coated; skin hot and dry; pulse 112. Prescribed two and a half grains each of camphor and sulphate of quinine, with the fifth of a grain of the acetate of morphia, to be taken every three hours, and poultice to be continued.

18th. The swelling has rapidly increased—extends quite up to elbow and nearly around the arm; gives continued aching pain, though less tender to the touch. The centre of the swelling is now quite dark, while the border is marked by a bright areola; has only taken two doses of the medicine, on account of its causing sick stomach, and taken no food but a little cracker and tea; constitutional symptoms worse, I now made an incision about four inches long through the skin and cellular tissue lengthwise, and through the centre of the pustule. There was no bleeding except from the angles of the incision, extending to the inner boundaries of the areola, and the cut edges remained in contact on account of lost contractility in the divided part. To the cut edges and to the bottom of the incision, I freely applied lunar caustic, and painted the surface over and around with tincture of iodine. Directed the anodyne to be continued as often as necessary, to allay irritability and to procure sleep at night, and *cider* (the patient having expressed a preference for it), *ad libitum*, with beef tea or chicken soup, if she could take it; yeast to be mixed with the flax seed meal for poultice.

19th. Dr. Kissam was able to take charge of the patient. We

found her complaining of much less pain in the arm, though evidently more prostrated on account of some nausea and continued disinclination to take food; had taken considerable cider however, and had kept it down without trouble. She slept under the influence of the anodyne. The swelling is still extending up the arm, above the elbow, and on the surface of it, near the incised part, are several groups of small vesicles of dark purple color; skin hot; pulse 108; tongue drier, and brown in the centre. Lunar caustic was again freely applied to the incision, the whole painted over with iodine, and the poultice continued; the anodyne solution to be given as often as necessary, and quinine again ordered in sugar coated pills—two every two hours.

20th. Areola has extended nearly up to shoulder and axilla. Just above the elbow on the anterior aspect of the arm, following the location of a group of vesicles, there appears to be a new centre of gangrene. On making an incision through it, the tissues were inelastic, and as in the first instance, without bleeding; patient complains much less, though she does not appear as well; pulse weaker, 112; tongue dry and brown; has had less sickness of stomach, and been able to take more food, and her medicine regularly. Caustic again applied freely over the whole surface of swelling, as well as to divided portions; poultice and other treatment continued with stimulus; bowels to be opened by comp. colocynth pills.

21st. Superficies of swelling the same, terminating abruptly in a bright, red areola near the shoulder; gangrene however, extending from both centres, threatening elbow and above the joint on the front of the arm. The second incision extended and caustic again applied to raw surfaces; other treatment continued.

22d. Suppuration commencing; probe passes freely for two inches under cutaneous tissue; muscles denuded at first *point d'appui*. Continued stimulating tonic treatment; omitted caustic, and continued poultice to arm.

26th. Same treatment has been continued; the subcutaneous cellular tissue, and that which dips down between the muscles and the superficial fascia, so far as apparent by the incision and the use of the probe, destroyed and sphacelating, with an abundant discharge of pus; edges of the divided skin dark and flabby; near the border of the swelling the previous redness of skin has given place to a yellow tint, similar to that which is frequently observed following ecchymosis. This was the last time I saw the

patient, but from Dr. Kissam I learn, that with the exception of the parts immediately surrounding the pustules—covering a space of about two by three inches around the first *point d'appui*, and for a space about half as large for the second—the skin has retained its vitality, and still covers a slowly granulating surface. The superficial fascia and cellular tissue have been wholly destroyed, and the skin has been kept alive by the capillaries of its substance, independent of any connection with the subjacent tissues. The use of the arm will be much impaired.

Besides the cases here given during the interval of time now gone over, "I have heard of ten other cases in this city, and of several in New York, which have not been reported. Meanwhile cases have been reported from other places by Dr. E. D. Ayres, of East Creek, N. Y.; Dr. D. Dana, of Lawrence, Mass.; Dr. J. J. Ellis, of Bristol, R. I.; Dr. J. F. Noyes, of Waterville, Maine; Dr. D. W. Wainwright, N. Y., and Dr. Collins, of Providence, R. I.

The cases that I have selected and given in detail, are for the purpose of illustrating the various forms of the disease, as given by different writers. According to Bourgeois, the latest authority,* malignant pustule appears most commonly on the face, and next on the hands, neck, and arms, and rarely on the trunk. Its *symptoms* may now be summed up as follows:

It first appears in the form of a painful swelling, which after a lapse of time varying from one to three days, rarely more, develops upon its central part, a small reddish or purple spot, accompanied with itching. In the course of twelve or fifteen hours more this spot changes into a bleb or vesicle, not usually larger than the head of a pin, containing a reddish brown or yellowish fluid. Owing to the continued itching, the vesicle is ordinarily ruptured soon after its appearance; if otherwise, it dries up in about thirty-six hours, leaving the exposed derma dry, and generally of a livid color. Itching now ceases; and after a time varying from a few hours to a day, the centre of this discolored and denuded surface begins to grow hard, and becomes surrounded by an inflamed areola covered with numerous small vesicles similar to the vesicle which first appeared. The middle of this areola is depressed, and the color varies from yellow to black. It is now hard in the centre, and more painful than at any other stage. It is, however, a remarkable feature of malig-

* *Traite Pratique de La Pustule Maligne et de L'edeme Malin ou des deux formes Du Charbon Externe Chez L'Homme*, par J. Bourgeois, etc., etc., Paris 1861.

nant pustule that severe pain is generally absent; and this character, so different from all other acute inflammations of the skin, is a valuable negative diagnostic of the disease. During the next twenty-four or forty-eight hours the subcutaneous tissue becomes involved; the tumor strikes deeper and rapidly extends, yet it is so indurated as to be easily circumscribed, and its confines determined without difficulty. Meanwhile the central point, now of brown or livid hue, exceedingly hard and insensible, becomes gangrenous. If the disease ceases to make further progress, an inflamed circle of vivid redness now surrounds the gangrenous portion; the tumefaction which had before rapidly extended diminishes, and the patient experiences something like an agreeable warmth accompanied by a pulsatory motion of the affected part. The pulse which had before grown irritable and feeble revives, strength increases; and if there has been some degree of fever, accompanied with nausea, as occasionally happens, it is resolved into a gentle perspiration and the nausea ceases. Suppuration now sets in between the living and the dead parts of the pustule, and the detachment of the gangrenous portion leaves a suppurating surface of variable extent in different cases. Should the disease on the contrary tend to an unfavorable issue, generally no suppuration takes place; the gangrene spreads rapidly from the centre to the circumference of the tumor; the pulse becomes smaller and more contracted; the patient complains of extreme lassitude with an inability to sleep, is attacked with fainting fits, and becomes passive as to the result: there is disinclination to take food or medicine, or to have anything done, and there is a total loss of appetite; the tongue is dry and brown; the features shrink; the skin is parched; the eyes are glassy; cardialgia and low delirium premonish the fatal termination.

Such are in general the ordinary phenomena of malignant pustule, usually terminating in a period of time varying from five to eight days. Exceptional fatal cases have been recorded however, varying from 24 hours to 16 days. In the suddenly fatal cases, the forces of the constitution are so quickly and entirely subverted by the malignancy of the disease, that few symptoms are manifested; the powers sink under it as it were without resistance.

Another variety of malignant pustule which commonly attacks the hands or arms, is of less regular character, in some cases

presenting an appearance and running a course very similar to circumscribed phlegmon, while in others it is exceedingly violent and fatal in a few hours; and in other cases still, it runs on for several weeks and finally proves fatal rather from the effects of the disorder than from the disease itself. In the majority of these cases there is intense local pain in the affected part from the commencement, with enormous swelling and more or less redness. A small vesicle or pustule forms in the centre and proceeds to take on a gangrenous character. Sometimes it becomes circumscribed and limits its action to the skin; but at other times numerous phlyctenæ cover the surface, and the destructive inflammation burrows into the cellular tissue which envelopes the muscles, completely surrounding and disintegrating these organs, which sometimes become soft, black, and gangrenous; the blood-vessels and nerves also become involved, and, as a necessary consequence, the death of the part ensues. It is in this second variety of malignant pustule that arise the chief difficulties of a correct *diagnosis*.

Of all the diseases that man is heir to there is none in which an early diagnosis is more important than in malignant pustule. It is indeed of such moment that the lapse of a few hours or a day may entail the most deplorable consequences. At its first appearance it might be mistaken for the hard, inflamed and painful swelling sometimes produced by the *bite of certain insects*—hence it has been called *puce maligne*, or malignant flea bite. These bites, however, may always be recognized by the presence of a minute yellowish-colored point in the centre. Furuncle, or common boil at its commencement, has no central bleb or vesicle similar to malignant pustule, which, moreover, is speedily surrounded by an emphysematous areola studded with vesicles very different from anything that takes place in furuncle. When malignant pustule has progressed for two or three days and gangrene to a greater or less extent has taken place, the disease can only be confounded with *cancrum oris* with the *bubo of plague*, or with *gangrenous erysipelas*. Malignant pustule differs from *cancrum oris*, or the gangrenous affection of the lips and cheeks occasionally occurring in children, in that this latter disease begins on the *inside* of the mouth and only extends consecutively to the skin—just the converse of malignant pustule. From the pestilential bubo of plague, it is chiefly distinguished by the premonitory symptoms of plague and the number and situation of

the pustules. Malignant pustule is rarely multiple. In plague, there are generally several pustules usually attacking the superficial glands of the groins, armpits and neck, and preceded by fever.

The second variety of malignant pustule above described, is not unusually represented by English and American writers under the head of *Phlegmonous*, or *Gangrenous Erysipelas*. Nunnely describes the same disease as a variety of erysipelas, under the head of "cellular variety." "This," he writes, "like that which equally involves both skin and cellular membrane, varies much in violence, and owing perhaps to its being principally seated in the cellular membrane, which is the special locality of true phlegmon, in mild cases it presents us with a very near approach to circumscribed phlegmon. The mischief varies from little more than a whitlow, or a suppurating absorbent gland, to that form of the disease which induces a destruction, spreading over almost half the subcutaneous cellular membrane of the body. So also does the rapidity of the disease differ much; *in some cases it proves fatal in a few hours, in others not for many weeks*, when the patient dies rather from the effects of the disease than from the complaint itself. In the *majority of cases* the constitutional symptoms are *preceded by some local affection*, but not invariably, for at times the constitutional derangement appears without any local complaint."* It is evident from this extract that Nunnely considered the malignant pustule which usually attacks the hands and arms, and the "cellular variety" of erysipelas one and the same disease.

Wilson, in his work on Diseases of the Skin, wholly omits the consideration of malignant pustule, while he, like Nunnely, gives the local symptoms of this disease under the head of erysipelas phlegmonoides. But it is useless to pursue these omissions, we are all familiar with them, from our inability to find malignant pustule treated of to any extent in English or American works. Erysipelas is generally ushered in by febrile symptoms, and neither is the phlegmonous or any other variety that we are acquainted with, preceded by a pustule or sanguinolent vesicle in a particular point. Gangrenous erysipelas only becomes such through excess of inflammatory action. From its commencement it has a dark red, but smooth and soft surface, and the vesications which form upon it rarely or never occur earlier than on the

* Nunnely on Erysipelas, p. 147, American edition.

fourth or fifth day of the disease, and are irregular in form and size. Malignant pustule, we have seen, is the converse of this. It *starts*, as it were, with a pustule that is speedily surmounted by a single vesicle; the seat of this becomes nodulated, and proceeds as from a common centre, the vesicle being quickly followed by gangrene without tendency to suppuration. The fever in malignant pustule generally follows the appearance of the local disease, and is irritative and asthenic; whereas, in erysipelas the fever precedes the local disease, and is sthenic from the beginning, while the local disease runs an irregular course and has a decided tendency to suppuration and abscess. These are important differences, and generally sufficient to distinguish the one from the other.

The *pathology* of malignant pustule* is distinguished by a fluid state of the blood, which is usually very dark colored. The texture of the heart is softened, and its surface covered with ecchymosed spots; the veins are sometimes softened and ecchymosed, and usually contain clots, some of which are black, while others are yellowish-white, and of gelatinous consistence. The lungs are covered with superficial ecchymoses, presenting over their surface a number of deeply penetrating black spots, produced by local sanguineous infiltration. The inner coat of the stomach and intestines presents in different places corresponding to the course of the vessels, prominent dark colored spots, formed by blood effused between the inner coats and the peritoneal covering. The villous coat of the stomach is also occasionally found ecchymosed; the liver and spleen are gorged with dark blood, and the kidneys surrounded by emphysema. Microscopically, M. Robin, after repeated examinations, was unable to discover anything in particular indicative of its nature, only the granular appearance which is characteristic of mortification by gangrene. The special characteristic of the disease seems to be that it is *antipurulent*.

Prognosis. It is always grave, yet like other gangrenous disease, it is frequently self-limited, and may get well spontaneously. Such a result however should never be relied upon, for its tendency in most cases is fatal, especially is this the case, when the disease attacks the face, head or neck. On the extremities, it is less dangerous to life, but frequently involves great loss of sub-

* As given by Bourgeois.

stance and deformities which may subsequently require surgical aid for relief.

Treatment.—Induce and promote suppuration, and sustain the powers of the constitution. To this end, as soon as the nature of the disease is ascertained, the vesications formed on its surface should be opened, the fluid contents removed, and the denuded part covered with lint saturated with the hydrate of potassa or other caustic. Six or eight hours afterwards this may be removed and a poultice applied; and twenty-four hours after this, if pain and burning heat have nearly or quite ceased and no areola has formed, it may be safely concluded that the caustic has effectually permeated the whole of the diseased tissue, and that it will proceed to healthy suppuration by the continued application of poultice. But if, on the contrary, a hard and deep-seated painful tumor has formed around the primary seat of the vesicle, we may take it for granted that the disease is extending. The tumor should be forthwith divided through its whole width and depth, by a crucial incision, the gangrenous parts removed, if any have formed, and caustic thoroughly applied to the divided surfaces. This proceeding is equally requisite when the slough which forms on the centre becomes hard and impenetrable like a piece of dry hide, and this must be removed to admit of the unimpeded action of the caustic. Scarifications and cauterizations, with the continued application of poultices, should be repeated daily until suppuration is established, or until the extent of the pustule is clearly defined. Internally, the bowels being first cleared by mild cathartics, quinia four or five grains every three or four hours with wine and brandy, and as much food as the patient can be induced to take, (there being generally disinclination to take food) and opiates with camphor, as much as may be necessary to allay pain and produce sleep, constitute the basis of treatment. In spite of everything, the peculiar malignancy of this disease, frequently proceeds straight on to a fatal termination; and this is sometimes the case even when the local disease seems to be checked in its progress.

In conclusion, it cannot have failed the attentive observer, that malignant pustule in the United States has been concurrent with epizootic disease; and, that so far as the prevalence of epizootic disease is concerned as a necessity for the existence of malignant pustule, both epidemically and sporadically, the conditions seem to be no less applicable to the United States than to France.

With *murrain*, it has several times prevailed; and recently in various parts of the northern portion of the United States there appears to be reason sufficient to attribute it to the prevalence of *pleuro-pneumonia* among cattle, which, in some cases at least, according to the evidence before the legislative committee of Massachusetts, resulted in *gangrene of the lungs*—a disease, which, according to M. Dupuy, (*loc. cit.*) was observed to cause malignant pustule in man as long ago as 1827. For the occurrence of malignant pustule in New York and Brooklyn, I ascribe it to the most universally attributable of all causes, malignant carbuncle. For the evidence of the existence of this disease, I only need refer to any of the various reports of sanitary committees for several years past; or, if incredulous in regard to these reports, to the *swill-milk* stables in our midst, which are a disgrace to any civilized community.

BROOKLYN, N. Y., *January 21, 1862.*

Article 14. Strictures of the Urethra, and means for their Treatment. By JAMES M. MINOR, M. D., Delegate from Kings County Medical Society.

The manifold and serious difficulties with which the surgeon has to contend in treating strictures of the urethra, have stimulated the inventive faculties of the profession to a high degree in order to produce some mechanical contrivance based upon the anatomical and physiological peculiarities of that most important and delicate passage.

The urgent necessity of such cases, involving as they do the health and comfort, as well as in some cases the life of the patient, and it may be his moral and social status, from the implied source of such affections, make it eminently desirable to devise some speedy, safe and efficient means of relief.

A very great variety of instruments and appliances have been devised for this purpose, but of these it is not necessary here to speak as they are generally known through the various publications on the subject.

Modern surgeons have rejected almost all expedients except the bougie, some even going so far as to say that no stricture, if judiciously treated, is impermeable by a properly constructed bougie.

Without venturing to express an opinion as to the correctness of this latter assertion, we may say that almost every stricture may be overcome by a judicious and patient use of the steel or gum-elastic bougie of the proper curve and proportions.

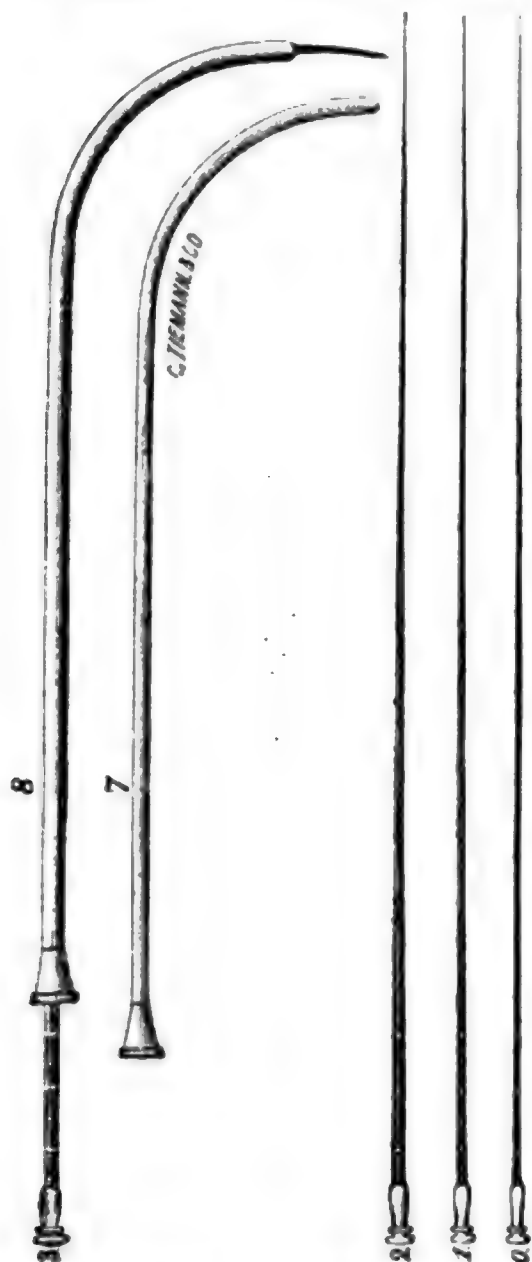
There are cases however of *very great* difficulty, so great indeed as to be insurmountable by the ordinary form of instrument even in the hands of the most skillful and judicious practitioners; or, if overcome, it is at the expense of labor, time and anxiety to the surgeon, as well as suffering and danger to the patient.

Having encountered these difficulties through a considerable period of naval and hospital service—some of the cases resulting

in urethrotomy and other serious complications—I have endeavored to devise an expedient which would remove some of these obstacles from the path of the surgeon.

The instrument which I now present to the Society, will, I think, aid materially in accomplishing that object. It is intended to be used only in the closer kind of stricture, or such as will not admit a No. 4 bougie.

It consists of a metallic sound of the usual curve, perforated longitudinally, with a bore of capacity sufficient to receive and pass the smallest filiform gum elastic bougie. The outer extremity is funnel-shaped, and flattened transversely, serving the purpose both of a funnel and a handle. Accompanying this, is a filiform bougie fitting the bore of the sound somewhat loosely. Its mode of application is as follows:



Having ascertained the locality and character of the stricture, the metallic instrument, (it might with propriety be called a curved director) is introduced and carried down to the stricture against which it is firmly pressed, but with no intention of attempting to pass it, the object being merely to engage it well in the entrance of the stricture; warmed sweet oil is now poured into the funnel-shaped extremity and allowed to trickle down to the stricture into which it will be forced by the column above in the director. If the point is kept firmly pressed against the stricture, the oil cannot escape from it into the urethra anterior to the stricture, but will, as I have said, be forced into the stricture. If filled with oil before its introduction, it will reach the stricture more rapidly and save time.

The sound being in position and there retained until the parts are well lubricated with the oil, the filiform gum elastic bougie is passed through the bore down to the stricture, into which it can

gently insinuated by steady, continuous pressure. The merit claimed for this instrument is,

1st. That it utilizes very small gum elastic bougies, which, from their size and flexibility, are admirably adapted to pass close strictures, (but which could not otherwise be made available) by supporting them through their entire length so as to give them a considerable amount of penetrative power to the distance of an inch or more beyond the end of the director, though not enough to endanger the mucous membrane, even in the hands of the most unskillful operator.

2d. That the director guides the filiform bougie past the lacunæ, mucous folds and false passages, directly into the entrance of the stricture.

3d. That so small a bougie from its elasticity, will pass a stricture with so small an amount of irritation, comparatively speaking, of the passage as greatly to diminish spasm, and to that extent lessens the difficulties of the surgeon and the sufferings of the patient as well.

4th. That it admits of the application of oil directly to the stricture through its entire length, by which that passage will be much softened and relaxed, as well as opium and belladonna, or any other anodyne or antispasmodic medicament which may be deemed necessary in cases of irritation or spasm, from the presence of the instrument or from any other source.

5th. That it might in some cases be used in the manner proposed by Mr. Wakeley, the gum elastic instrument acting as a guide upon which the metallic director is passed through the stricture.

6th. That it enables us to dispense with the dangerous instruments Nos. 1, 2 and 3 metallic bougie, and yet have at our command others of the same size and considerably smaller, whose use involves no pain to the patient.

The accompanying cut not exhibiting the entire series necessary for a complete set, may need some explanation. It should contain in addition, No. 3 gum elastic bougie, making four in all, and Nos. 5 and 6 metallic perforated sounds, all of which are bored to fit the flexible bougies, the small sound to receive the small bougie, and so on in corresponding series.

A reasonable confidence in the mechanical fitness of this instrument, and an experience, which though limited, is sufficient to demonstrate its usefulness, embolden me to offer it to the profession as a safe and efficient surgical auxiliary.

**Article 15. Dilatation of strictures in the Urethra. By
J. H. HOBART BURGE, M. D., one of the Surgeons to the
Long Island College Hospital, Brooklyn, N. Y.**

In the published Transactions of this Society for last year, will be found an article describing a new instrument, devised by me, for dilating strictures in the male urethra. As that paper was sent to the State Society by the Kings County Medical Society, which I have now, in common with others, the honor of representing here, I deem it my duty to invite your attention to some improvements which I have since made in my instrument, and which I hope will be found of great practical utility. To render the subject intelligible to those whom I address for the first time, it is only necessary that I should refer very concisely to the principal points presented in the former paper. Recognising the danger of introducing very small instruments into the urethra and the consequent importance of using the largest that will pass without violence, I attempted to show that in actual practice, the greatest obstacle to success was the inefficiency of the mechanical means at our command; that, in order to decide what instrument was of proper size to enter or pass the stricture, it was necessary to try successively several sizes, of course irritating the sensitive parts more and more at each introduction and withdrawal; or else, on the other hand, to select one so minute as to endanger the integrity of the mucous lining of the canal, and perhaps increase the difficulty we were called to relieve. It then became obvious, at least to my own mind, that the great desideratum was an instrument which would enable us to feel our way safely from point to point, changing its size as occasion might require, without danger to any part, and obviating entirely the necessity of withdrawing it till the operation was completed. This was the problem which I proposed to myself and the solution of it is the instrument which I now exhibit. It consists of concentric cylinders and a moveable central style, all curved in the arc of a circle and so arranged, the smaller within the larger,



that the different sizes may be projected at the will of the operator. The design is to carry the instrument *in full size* to the point of stricture, patiently insinuating it as far as it will go with gentle effort. Then, and not till then, advance the second size till it in turn meets with some obstruction when in like manner the next size must be pushed forward—always proceeding from larger to smaller till the stricture is passed. Those who see this instrument without description or explanation generally get a false idea of its action and of my design in its construction. To prevent, more effectually, this misapprehension, I contrasted it with Whakeley's instrument, which consists of a style and several *separate* cylinders, his design being, first to introduce the style, and then, successively, the cylinders upon the style, always proceeding from *smaller to larger*, which instrument, although it may possess some advantages over the ordinary bougies, inasmuch as it obviates the necessity of frequent introduction and withdrawal, is practically the exact opposite of mine, and involves all the risk of injury to the passage which attends the use of a fine instrument with nothing to guide it in the way it should go. The style once introduced is certainly a sure guide to the cylinders sliding thereon, but the difficulty consists in safely introducing the style which is, of necessity, very small. It is clear, to my mind, that even in those cases in which recourse must be had to the finest instruments ever used, there is great advantage in gently dilating the canal all the way down to the stricture, and especially just where the contraction begins, thus removing the folds of membrane which might otherwise engage the point of your instrument. By the larger cylinders of this multiple bougie this preliminary dilatation is effected and maintained, while the smaller are safely guided in the proper direction.

The alterations which I have made in this instrument since its first exhibition are :

1. The number of cylinders is less, and the whole instrument

reduced in size. It occurred to me that when a catheter No. 7 could be introduced through a stricture, we could succeed very well with the ordinary means, and on that account I have made No. 7 the maximum size of my dilator.

2. The style which originally occupied the centre of the instrument, completely filling the smallest cylinder, I have caused to be removed, and a bore to be made in the handle continuous with the canal thus formed—so that when the stricture is passed the patient may have instant relief from a distended bladder. Lest the smallest of the cylinders should prove, as it sometimes doubtless will, too large to enter, I have provided an independent style of sufficient length to pass through the handle and emerge at the point. This, of course, is to be used without withdrawing the instrument. If the use of the style become necessary in a given case, and with it we succeed in passing the stricture, there can hardly be any difficulty in sliding *upon it* the smallest cylinder, after which the style may be immediately withdrawn and the urine allowed to escape.

3. It will at once occur to you that many strictures occasion a tortuosity of the urethra, and that a firm metallic bougie cannot be made to follow these unnatural windings. To obviate this difficulty, I have suggested to Mr. Tieman to provide with each instrument some long flexible bougies, small enough to enter the bore of this. Some may ask, 'If we must resort to a flexible, why not do so without the intervention of the metallic?' I answer, because the metallic acts as a sure guide down to the very seat of the difficulty, and keeps all folds of mucous membranes from obstructing and turning back the point of the flexible.

4. Lastly, I have made an addition to my instrument, which is so fraught with danger that I am sure you will excuse me for introducing the subject, even here, with solemn words of warning. Cases of stricture do occur in which all simple means of relief fail, though I believe the patience of a patient man should be exhausted before the more heroic measures are adopted. If then, after faithful and ineffectual trial of all means both local and general, the surgeon deems it advisable to divide the stricture, I have made provision for that necessity by furnishing a second style, in size and length corresponding to that already described, and differing from it only in having a cutting extremity. This is to be introduced through the handle, while the

main instrument is held by a guide to the strictured part. Let it be distinctly understood that this is *only* for extreme cases, and *always* as a dernier resort, and that the part to be divided is to be first fairly reached by advancing the cylinders from larger to smaller, as already described; and, lastly, that the operator decide, in advance, how far his incision shall extend, and gauge his instrument accordingly by means of the revolving nut arranged for that purpose upon the handle. The possibility that some tyro in surgery might use this part of my instrument injudiciously, almost inclined me to discard it altogether; but when I exhibited it at the King's County Medical Society, it was suggested by Dr. J. G. Johnson that, with this addition, it would constitute a valuable trocar and canula for perforating the bladder per rectum. For this purpose, therefore, and also in very rare cases, for dividing strictures in the urethra, and in cases still more rare, for procuring the expulsion of the ovum, I confide it to the care of a conservative profession.

Some of my medical friends are using this instrument (of course without the cutting style) for dilating the cervix uteri, and report very favorably. Dr. George T. Elliot, of New York, writes that "it affords" him "great pleasure to say that" he "has found it useful as a dilator of the uterine cervix, and that in one case of dysmenorrhœa its effects were very happy indeed."

It is manufactured by Geo. Tiemann & Co., 63 Chatham street, New York.

Article 16. A new instrument. By J. H. HOBART BURGE, M. D., one of the Surgeons to Long Island College Hospital, Brooklyn, N. Y.

I desire to exhibit to this Society an instrument which I devised some months since for the removal of foreign bodies from the œsophagus and larynx. An account of it has appeared in the Philadelphia Medical and Surgical Reporter, under the name of "Throat Forceps;" but it has since proved so highly useful in a great variety of cases, that I should not feel justified in withholding it from the knowledge of the profession. It is, as you see, a simple pair of forceps, about twelve inches long; the blades do not cross each other, but are hinged together by a pivot running the whole length of the straight portion of the instrument (about seven inches,) while the extremity of each blade is curved for the distance of five inches, perfectly smooth externally and roughened where the surfaces are in apposition. The handles



are at a right angle with the shaft, and are moved like those of scissors, by the thumb and index finger. You will observe in the handle a screw, by which the blades may be slowly but forcibly separated, and fixed at any point. This leads me to speak of the second use to which this instrument has been applied, viz.: for dilating the cervix uteri in cases of dysmenorrhœa. Dr. Theodore L. Mason, of Brooklyn, has used it for this purpose with marked success. 3. It is equally valuable for removing foreign bodies from *all* the deep cavities or passages. I need not enumerate them, though it seems well to say (as it may not occur to all) that a small calculus, or a piece of elastic bougie, may by it be removed from the urethra. 4. It is a very good speculum for the ear and for the nose. 5. A piece of sponge may be firmly held between the blades, thus constituting it a superior probang—superior because always clean—always ready. In this way I use it to make applications to the os

uteri as well as to the throat. 6. It has just the right curve to carry a ligature through the nose in order to plug the posterior nares, and 7, to assist in removing nasal polypi. 8. It is an invaluable addition to our stock of instruments in operations for necrosis, enabling the surgeon to remove the sequestrum with less violence to the living tissues than would otherwise be necessary; 9, and lastly, it is an exceedingly convenient form of forceps for use in the most ordinary cases of surgery.

Manufactured by George Tiemann & Co., 63 Chatham street, New York.

Article 17. The Points of Election and Kind of Operation for Amputation of the Lower Extremities, with reference to the Use of Artificial Limbs. By DOUGLAS BLY, M. D., Rochester, N. Y.

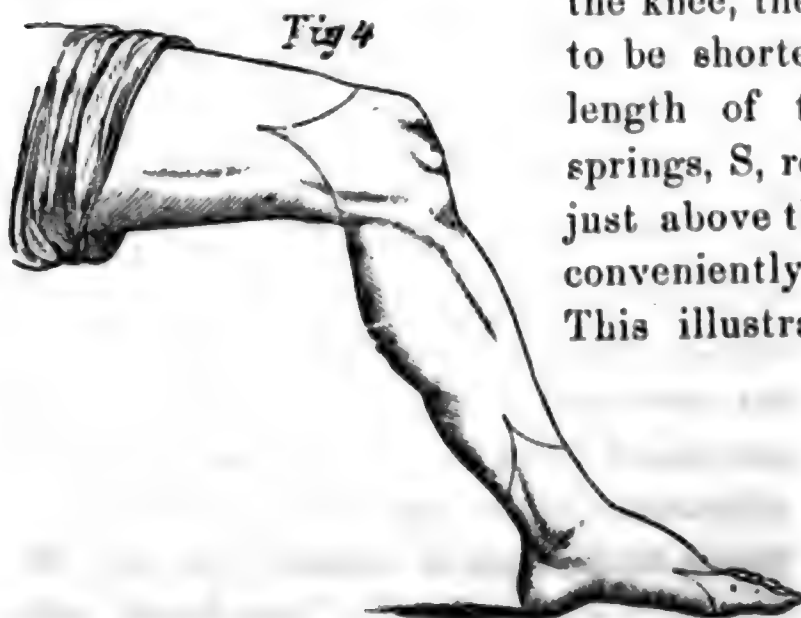
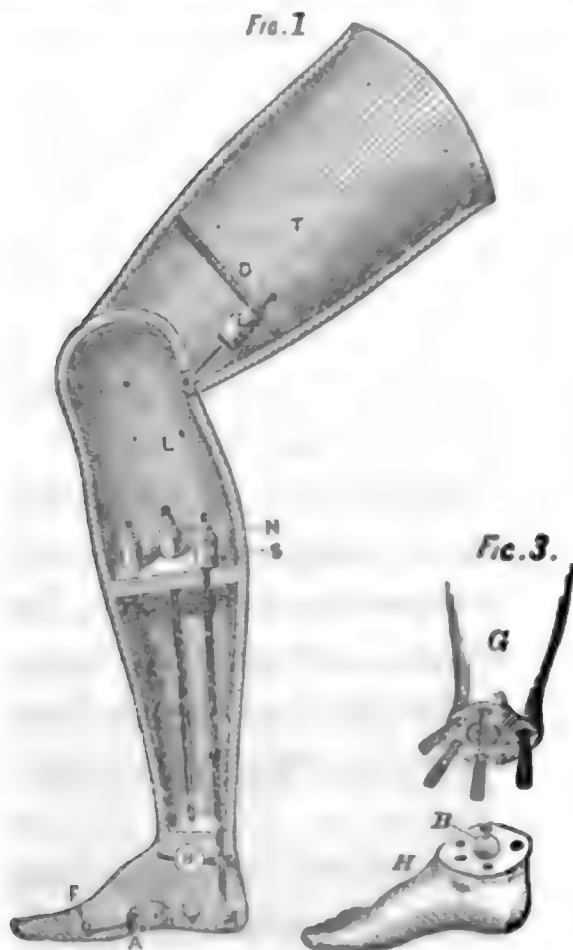
POINTS OF ELECTION.

Since an early period in surgery, surgeons have recognized the importance of selecting such points for amputation of the lower extremities as were best adapted to the application of artificial limbs. And many of the authors of works on surgery have given such points as were considered best adapted to the artificial limbs made at that time, but the great improvements which have been made in artificial limbs have materially changed the old points of election; therefore this subject demands the attention of surgeons generally.

In accordance with the high state of perfection now attained in the construction of artificial limbs, all amputations performed on the foot should be anterior to the insertion of the flexors of the foot. The operation known as "Chopart's," severs the flexors of the foot, and should never be performed under any circumstances whatever. The moment the flexors are severed, the extensors, having no antagonists, draw the heel upward, extend the foot on the leg, and cause the amputated surface to point almost directly downward. This deprives the patient of all power to use the remaining portion of the foot, and also renders him incapable of wearing a useful substitute. I am aware that, to obviate this difficulty, some surgeons have severed the tendo achilles, but that has proved ineffectual; it is only a partial relief at best. Therefore amputation at this point renders the patient a hopeless cripple. The wound is slow to heal, *always tender*, often ulcerating, and the remaining portion of the foot is generally a curse to the patient as long as he lives, unless he submits to a secondary amputation.

It is but a short time since the professor of surgery in the Geneva medical college, performed secondary amputation for such a

patient. This patient had had the tendo achilles cut twice, and then made an unsuccessful effort to wear a substitute constructed by a noted firm in New York city, but at last to better his condition, submitted to reamputation. (*See cut, fig. 5, which represents a stump after "Chopart's operation."*)



Amputation through the ankle joint by sawing through the malleoli, known as "Symes' operation," is less objectionable; still, since the artificial leg has been brought to such perfection, there are reasons which weigh heavily against this operation. The ankle joint in the artificial leg should correspond with the one of the natural leg, but cannot in this case and be constructed after the most approved plan, on account of the length of the tibia and fibula.

The lower portion of the bones occupy space which is needed for the artificial joint. (*See cut Nos. 1 and 3*). For amputations below the knee, the cords C, Fig. 1, have to be shortened according to the length of the stump, until the springs, S, rest on the plane seen just above the ball, B, and cannot conveniently be placed any lower. This illustrates the necessity of

removing at least the ends of the tibia and fibula. To get a good fit with an artificial limb, the

stump should be conical, or at least it should not be larger at the end than it is higher up, as it renders a portion of the interior of the artificial too large, if made large enough to allow the bulbous extremity to pass through. (*See cut, Fig. 6, which represents a stump, after "Symes' operation."*) Or if the leg is made to lace up, even then the ankle is necessarily large and clumsy.



It has been supposed that by this operation the patient would be able to take the most if not all his weight upon the end of the stump, but the cases which I have seen do not sustain the supposition. I have not seen one that could support the whole weight on the end of the stump, though some of them could sustain some, not enough however to counterbalance the difference in the substitutes, while some cannot bear any more than those who are amputated higher up. Therefore, when amputation becomes necessary which would sever the flexors of the foot, it should be performed a sufficient distance above the ankle joint to admit of an artificial substitute with an ankle joint of the most perfect construction now attained.

The junction of the middle and lower third of the tibia is the lowest point at which amputation of the leg can be performed, and give sufficient room for the construction of a good, substantial and graceful artificial limb, with an ankle joint of the most recent improvement. *It also gives a stump of as much length as is of any service to the patient*, therefore the junction of the middle and lower third of the tibia should be the *first point of election* whenever the flexors of the foot cannot be saved. (See point indicated on leg, cut, fig. 4.)

An artificial leg, with lateral motion at the ankle joint, will bear a stump of greater length, with comfort to the patient, than one which has no lateral motion at the ankle. The testimony of those who have undergone re-amputation is, that with a very long stump and an artificial leg which had no lateral motion at the ankle, they suffered much more from the cramping and prying of the stump against the sides of the leg when they stepped on any uneven surface, than they did after re-amputation, with a stump of less length. The fact that the junction of the lower and middle third of the tibia gives a stump of as much length as is of any service to the patient, is important in this connection. Then from this point the surgeon should not recede unless compelled by necessity. He should contest every inch until driven to the knee joint. But he should never operate through the knee joint, as nothing is gained by it while much is lost, because the end of the femur will occupy space which is needed for the construction of an artificial knee joint. True, an artificial joint has and can

be made in this case, but not near as durable and comely as when the condyles of the femur are removed. The size of the condyles makes the end of the stump too large, and the same objection arises as in "Symes' operation."

If the femur is sawn through just above the condyles, the stump assumes a conical form, and the end of the bone no longer presents any obstacle to the construction of an artificial joint of the most modern improvement. Then for amputation of the thigh, the point of election is just above the condyles of the femur. (*See point indicated on thigh, cut, fig. 4.*) From this point upward the surgeon should contest every inch with redoubled vigor; and the higher compelled to go, the greater the value of every item of femur saved.

KIND OF OPERATION.

In the use of artificial legs no weight is ever taken on the end of the stump—in fact nothing is allowed to *touch* the end of the stump; but on the sides it is just the reverse. The artificial leg encases the stump, and more or less pressure is taken on all sides, particularly anteriorly and posteriorly. The stump is used as a lever to operate the artificial leg, and at every step there is considerable pressure on the anterior surface in carrying the leg forward, and then it is transferred to the posterior surface, just as the weight of the body is being carried forward on to the leg. Thus there is a pressure alternately on these two surfaces at every step. Besides this, with a leg in which there is no lateral motion at the ankle joint, there is more or less cramping and prying of the stump against the sides of the artificial leg whenever the foot is placed on an inclined plane, or one side happens to be placed on any inequality, such as a stick or stone, or uneven ground of any kind. Now as the cicatrix is always tender and sensitive, it becomes necessary that, in amputating the lower extremities, the surgeon should choose the kind of operation which will best protect the stump on all sides, particularly the anterior and posterior.

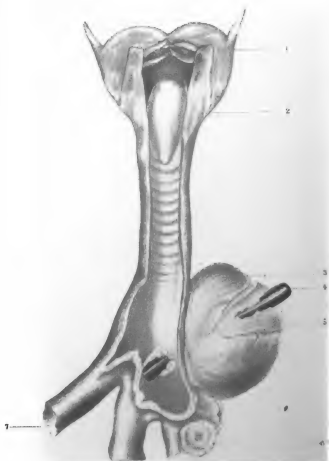
The operation which fulfills these indications best, is the *double flap*, the flaps being antero-posterior. (*See dotted lines on cut, fig. 4.*)

If the flaps are taken from the antero-posterior surfaces, they lap over the end of the bone or bones, and protect the edges by means of sound, healthy integument in all cases, and in many by a cushion of muscle. This brings the cicatrix across the end of

the stump where nothing can touch or injure it when wearing an artificial leg. Very small portions of the cicatrix may in some cases pass up on the sides laterally, but not enough to be of any account in the use of an artificial leg with lateral motion at the ankle joint, as that prevents all lateral cramping or prying against the sides of the stump.

The single flap operation is decidedly bad, because it often, if not always, brings the cicatrix just across the edge of the bone, where from its sensitiveness it seriously interferes with the use of an artificial leg.

The circular operation would, at first sight, appear to fulfill every indication, as it is alike on all sides, but unfortunately, instead of protecting all sides, it is really just the reverse. As soon as the weight of the body is placed upon the stump with a circular operation, the whole muscular covering, with the integument, glides upward in a body; the end of the bone or bones protrude beneath, covered by a thin cicatrix only, and instead of being protected on all sides are really protected on neither. Thus it is seen that the *antero-posterior flap operation* is THE operation to be performed whenever the surgeon has the privilege of choosing.



EXPLANATIONS OF PLATE.

Posterior View of the Larynx, Trachea, Bronchi and two Bronchial Glands.
Larynx and Trachea laid open. Drawn life size.

1. THE GLOTTIS.
2. THE PLUG.
3. THE ENLARGED GLAND LAID OPEN.
4. WHALEBONE PROBE, SHOWING THE COMMUNICATION BETWEEN THE INTERIOR OF THE BRONCHUS AND GLAND.
5. CHERRY-LIKE MATTER ESCAPING FROM THE GLAND AFTER BEING CUT OPEN.
6. A SMALL GLAND, SOFTENED.
7. THE LEFT BRONCHUS.

Label of the Penckhuppen. Albany

Article 18. Case of Suffocation, with Pathological Specimen. By J. R. BOULWARE, M. D., Albany.

[Communicated by the Medical Society of the County of Albany.]

History.—The patient from whom this pathological specimen was taken, was (S. H.) a boy aged eight years, who died suddenly at 11 o'clock, A. M., on the 7th inst. His father remembers his having had inflammation of the lungs sometime ago. During his earlier years; he was subject to a spasmodic croup; of late, however, he has had no croupy attack. For two weeks preceding his death he occasionally complained of a pain which he located about the middle of the sternum. This pain lasted but a moment, and at first occurred only at long intervals. On the eve of the 6th inst., he was suddenly seized with a severe attack of this pain accompanied by an effort to vomit with signs of choking. During this night and on the following morning, he had several similar attacks; he was kept from school on the morning of the 7th inst., not on account of these attacks which seemed not to have alarmed his parents, but "to take care of the baby." He played in the streets and in the house as usual; "feeling bad," he lay down on a bed with a school book in his hand and seemed to occupy himself about a next day's lesson. Very soon after lying down, his mother was astonished to see him rush from the bed into an adjoining room wildly struggling and choking, his eyes protruding and his face livid. He continued to run about this room without replying to the many anxious questions of his mother, his whole strength and attention seeming directed to "getting breath." He thrust his fingers into his mouth while leaping upon a chair and suddenly jumping from the chair to the floor; after which, with unsteady haste, he reached the bed again to which he clung ready to drop down from exhaustion. His mother then seized him as he was about falling, and while holding him in her arms endeavored to revive him by various little attentions, such as occurred to her in the excitement of the moment, but without effect. He continued to struggle feebly about four minutes when he was quite dead.

His appearance in health, like that of his mother, and of all the other children, was very pale and delicate.

Post-mortem.—At the request of Dr. C. D. Mosher, I made a post-mortem examination five hours after death.

External appearances.—Features composed and rather more turgid than natural; tongue protruding a little and fixed between the teeth; rigor mortis well marked; fluids from the stomach oozing from the nostrils. Moving the body or the slightest pressure over the epigastrium, would cause the contents of the stomach to flow out through the nostrils; the dependent portions of the arms and shoulders were covered with mottled patches and the back with a diffused lividness from sugillation.

Head.—Brain not examined.

Thorax.—On percussion there was everywhere loud resonance, with the exception of a small space below the right clavicle. Pericardium contained a half ounce of clear fluid. Tissue and valves of the heart and arteries were healthy, ventricles were contracted and empty, auricles contained a small quantity of fluid blood. The healthy portions of the lungs were distended to their utmost capacity with air, completely filling the pleural cavities and pressing firmly against the thoracic walls, and when the thorax was opened they did not collapse, but became more distended, so that their anterior surface rose above the walls of the chest. The upper third of the superior lobe of the right lung was hepatised and non-crepitant, on the anterior surface of this indurated portion and near the apex, there was a cicatrix of a dense fibrous structure $1\frac{1}{2}$ inches in length, and $\frac{1}{4}$ inch in breadth near the middle, and tapering to a point at either end, the pleural surface surrounding this cicatrix was considerably puckered, the lower lobes were healthy. The left lung was united to the thoracic walls by firm pleuritic adhesions. The tissue of the lung was healthy. On section the indurated portion of the right lung was seen to contain several encysted tubercles, some were the size of a small walnut and softened. The bronchial glands were enlarged, one the size of a hen's egg was found situated just above the right bronchus, between the trachea and vena cava, and firmly attached to the bronchus and right side of the trachea; on cutting into this enlarged gland, it was found to contain a light greyish substance of a cheesy consistence. This soft cheesy-like matter, and the deposit in the lungs, when placed under the microscope presented the usual characters of tubercle.

The pharynx, trachea and lungs were removed from the body together, and on carefully opening the larynx along its posterior wall, a greyish substance of a tough cheesy consistence, $\frac{3}{4}$ of an inch in length, of the same calibre as the trachea, and conical in shape, was seen in the upper part of the trachea, with its base pressed firmly against the rima glottidis, completely plugging up the glottis and effectually preventing the egress of any air, thus satisfactorily accounting for the distended condition of the lungs, the suffocation and sudden death of the little sufferer. On cutting the trachea open along its fibro-membranous wall as low down as the enlarged bronchial gland, an opening was found in the walls of the bronchus, communicating with the interior of the gland, and through which the above described plug found its way from the softened gland into the trachea.

Abdomen.—The stomach contained about a half pint of partially digested food, and it was pretty firmly contracted upon its contents. The mesenteric glands were enlarged. Other abdominal viscera healthy.

Article 19. Remarks on the treatment of Hemorrhage on the battle-field, with notice of a newly invented Tourniquet for military and civil service. By CHARLES A. LEE, M. D.

The loss of life is so natural a consequence of uncontrolled bleeding from a large vessel, that surgeons have, in all ages, looked with anxiety to an efficient means of restraining hemorrhage; and the reflection that three-fourths of those who die in battle, perish from the loss of blood, is a circumstance noways calculated to diminish this anxiety. The sad experiences of war give importance to all methods of saving life on the battle-field, whether immediately endangered by hemorrhage, or indirectly by shock and exhaustion. Indeed, no subject has taxed the ingenuity of surgeons more than this; namely, to discover the best and most certain modes of arresting the flow of blood, in time to save life, where large numbers lie bleeding on the field, and where the aid of army surgeons cannot, of course, be immediately rendered. All who have had experience in war, as well as all writers on military surgery, testify that this is, as yet, a most important desideratum. "Hundreds," says Prof. S. D. Gross, "die on the field of battle from this cause. They allow their life current to run out, as water flows from a hydrant, without an attempt to stop it by thrusting the finger in the wound, or compressing the main artery of the injured limb. They perish simply from their ignorance, because the regimental surgeon has failed to give the proper instruction."—(*Military Surgery*, Phil., 1861.) These considerations, it is hoped, will cause the present effort in this direction to be received with all proper favor and indulgence.

It has been stated by some writers that bleeding from gunshot wounds is rare; but this is not the teaching of experience. A majority of writers on military surgery express the opinion that primary bleeding always takes place if a vessel of any size is injured: and Sanson testifies to the constant presence of hemorrhage at the moment of injury. Macleod remarks, that "it is

unquestionable that a large number of the dead sink from hemorrhage."—(*Notes on the Surgery of the War in the Crimea.* Lond., 1858.) Let us look at some of the results of this war. In an effective force of 145,000 in the French army, 7,182 soldiers were killed, and 325 officers; while 35,912 soldiers were wounded and 1,625 officers—making a total of 37,587 wounded, treated in ambulances. Sixteen thousand were killed, or died of their wounds, or after operation; and a vast majority of them died from exhaustion, caused by loss of blood. There were 5,000 French soldiers wounded at the taking of Sebastopol; and the proportion of very serious wounds, as compared with merely severe or slight, averaged one in $2\frac{4}{16}$. One in five died on the place of combat from hemorrhage. Of the wounds, one in 4.3 was in the upper, and one in 3.5 in the lower extremities.

In the British army, during the Crimean war, the total number being 93,959, 2,598 soldiers were killed in action, and 157 officers, or 2.7 per cent. of the total force of men sent out, and 4.0 per cent. of the total strength of officers. Of the wounds, 30.2 per cent. were of the upper extremity, and 31.7 per cent. of the lower extremity. Sword, and lance, and bayonet wounds were comparatively rare, the vast majority being gunshot wounds. From the 1st of April to the end of the war there were 7,156 wounded treated, of which 4,436 were gunshot wounds of the extremities, of whom 254 died, and 2,526 were cured; 36 were bayonet wounds, and 7 sword and lance wounds; 126 miscellaneous. Of the immense number, both in the French and British armies, who were lost in the Crimean war, it is not too much to say, that multitudes who perished might have been saved if prompt and efficient measures had been taken to arrest the flow of blood soon after the wounds had been inflicted. The same remark will doubtlessly apply to large numbers who have fallen in the civil war now raging in the United States. By examining the accounts of the wounded in some of the regiments in the battle at Fort Donaldson, Tenn., we find that a very large majority of those who were wounded, were wounded in the upper and lower extremities, where the prompt use of a proper tourniquet would have arrested the bleeding; while most of those who were killed outright were shot through the head. Thus, in the Thirteenth Iowa Regiment, 14 were wounded in the lower and 5 in the upper extremity. In the Fourteenth, 11 in the lower, and 5 in the upper; 4 only in the body. Seventh Iowa, 15 in lower and 6 in

upper ; 4 in body, 6 in the head. Second Iowa, 35 were wounded in upper extremity, and 51 in lower ; 8 in the body, 31 in the head.

To save the life of the soldier from instant danger on the field when wounded, is a matter of such urgent necessity and grave importance, that it seems very remarkable that no more efficient measures have been recommended or adopted than those actually in use at the present day ; and especially when it can be shown that thousands of lives have been unnecessarily sacrificed.

NATURE'S METHOD OF ARRESTING HEMORRHAGE.

It is a well-known fact that nature sometimes stops the bleeding, even from arteries of considerable size. This is effected by the retraction of the artery, when perfectly divided, into the cellular tissue by which it is surrounded ; at the same time the divided extremity contracts by means of its circular fibres so as to diminish the caliber of the vessel. This contraction, however, is not sufficient, if the artery be of considerable size, to arrest the flow of blood from the end of the vessel into the canal of the cellular sheath, which becomes stretched and uneven on its inner surface. The blood then lodges in these irregularities and becomes coagulated, thus diminishing the area of the sheath, and, at last, completely plugging it up ; and this coagulation is assisted by the contact of the air, which is known to favor it, as well as stimulate the vessels to contract ; also, by the diminished force of the circulation, and the increased plasticity of the blood, both the consequences of its loss, the blood stagnates in the vessel and forms a clot from its divided end to the next collateral branch, not, however, perfectly filling its area, and only slightly connected with it at its divided end. Coagulable lymph is poured out from this cut of the artery, and is deposited between the inner and outer clot, and thus closes the mouth of the vessel completely ; at the same time, the end of the artery is connected to the surrounding parts by the exuding lymph, and is thereby secured against the pressure of blood. The artery, from its point of division to the nearest collateral branch, is gradually converted into a ligamentous structure, by which the canal is completely obliterated : the coagulated blood is absorbed, the lymph poured out in the adjacent tissues gradually disappears, and the parts resume their cellular condition. The same changes occur also in the end of the artery farthest from the heart. If an artery of

any size be but partially divided, the bleeding is rarely stanchèd by nature, when completely ruptured, as by the passage of a ball, the immediate loss of blood may not be very great, owing to the inner surface of the vessel being torn and drawn together at several points, containing coagulated blood; and if a large artery be merely punctured, an accident not likely to happen in war, the blood rarely flows through the external opening of the wound, but pours out between the artery and its sheath, where it coagulates and blocks up the opening in the vessel. The wound in the artery may be healed by the adhesive inflammation which is set up, or if not, an aneurismal sac may be formed by the pressure of the blood pouring into the sheath, which gradually increases and pulsates, but which disappears if pressure be made on the artery between it and the heart; or the tumor may be entirely dispersed by continuing the pressure for a sufficient length of time. Primary hemorrhage may not take place instantly on the receipt of a wound, but after a little time, when the faintness has gone off. Such cases are to be closely watched.

In very rare cases a longitudinal opening may be made into an artery, which may afterward heal, leaving no scar, the caliber of the vessel also remaining unobstructed; but generally in a wound of any considerable artery, the canal is usually diminished by the outpouring of the coagulable lymph. Macleod remarks that "a considerable artery may be fairly cut across and give no further trouble beyond the first gush of blood, which takes place at the moment of injury. In such cases the vessel contracts and closes itself. If only half divided, as it is apt to be by shell, or by the quick passage of a ball, then the hemorrhage will be, in all probability, fatal." Larrey records cases, where one severe hemorrhage occurred at the time the wound was inflicted, which did not afterwards recur, owing to retraction of the artery. Much will depend on the speed of the ball when it comes in contact with the vessel. If in full flight, it may divide it like a knife, and be followed by fatal hemorrhage.

ARTIFICIAL MODES OF ARRESTING BLEEDING.

Those employed on the battle-field, have usually been tourniquets, lint, bandages, compressed sponge, and styptics; to these may be added, in civil practice, cauterization, torsion and ligature.

Compression.—This is the only method, worthy of reliance, of checking the flow of blood on the battle-field; and it is not only

the most reliable, but the most simple and easily practiced. It should be remarked that the blood from an artery, if it does not escape into the cellular tissue, spurts out in interrupted jets, bright red and frothy; but if it comes from a vein it is of a dark color, and flows in an unbroken stream. Dark blood, however, may flow from the *distal side* of an artery completely divided. Arterial bleeding, which is by far the most dangerous, may be readily checked by pressure on the vessel between the heart and the wound; but if it be venous, the pressure should be made on the opposite, or distal side of the wound. The bleeding may cease of itself, when small vessels only are wounded, or it may be stopped by styptics, or other artificial means. But whether the blood issues from a number of small vessels, or from a deep seated wound penetrating an important artery, compression will be found to arrest it with almost equal certainty. But to be successful, it must be applied early, and steadily maintained until the surgeon can find time and opportunity to apply his ligature. At present we are, however, only concerned with it as a temporary expedient.

Compression of arteries may be *mediate* or *immediate*. An artery is mediately compressed when pressure is made on it between the wounded part and the heart. The pressure may be made with the *thumb* or *finger*, the *tourniquet*, *special and graduated compresses*, and with *tightly drawn bandages*. Mediate compression is, for the most part, a temporary expedient, only resorted to till more suitable assistance can be obtained. As strangulation of the limb, which unavoidably attends compression by tight bandages, cannot be borne except for a short time, and as special as well as manual pressure can only be successfully employed by the surgeon, the *tourniquet* is the only mode of compression remaining, on which reliance can be placed on the battlefield.

THE TOURNIQUET.

This well known instrument for stopping the flow of blood into a limb, until some requisite operation has been performed, or a more permanent plan of checking hemorrhage has been put in practice, has been employed for this purpose under various modifications. The old surgeons used to surround the limb with a band, with which they made such a degree of constriction, that the circulation was quite stopped. They also believed that the

pressure of the band was advantageous in benumbing the limb and moderating the pain of operations.

The violent pain and contusion, however, which such a tourniquet occasioned, being frequently followed by abscesses, and even by mortification, surgeons found it necessary to devise some other method for checking hemorrhage. The application of the insular band was first improved, so that it caused less pain and mischief to the skin. The limb was surrounded with a very thick compress, over which the band was placed. Two small sticks were next put under the band—one on the inside, the other on the outside of the limb—and they were twisted till the band was rendered sufficiently tight. A French surgeon, named Morel, is said to have made this first improvement in the application of tourniquets.

It is somewhat remarkable that the instrument still employed in the field is either a simple strap, buckled around the limbs between the wound and the heart, as in the Russian and Prussian service, and some other European armies, or a strap with a firm pad and buckle, or the old method of a simple cord twisted tightly with a stick. Indeed, in one of the best and most recent works on military surgery, the writer states, that "it is not necessary that the common soldier should carry a Petit's tourniquet, but every one may put into his pocket a stick of wood six inches long, and a handkerchief, or a piece of roller with a thick compress, and be advised how, where and when they are to be used. By casting the handkerchief around the limb, and placing the compress over its main artery, he can by means of the stick produce such an amount of compression as to put at once an effectual stop to the hemorrhage. This simple contrivance, which has been instrumental in saving the lives of thousands, constitutes what is called the '*Field Tourniquet*.' A pipe, knife, or ramrod may be used if no special piece of wood is at hand." ("*Military Surgery*," by S. D. Gross, M. D., Prof. of Surgery, Jeff. Med. Coll.)

The obvious objections to this form of tourniquet are, its bulk and unwieldiness, its requiring constant attention, or some peculiar contrivance to prevent the recoil of the stick, and consequent removal of pressure, and the impossibility of the patient applying it himself; and even in its modified form it cannot be relaxed and tightened with as much precision as is necessary; it compresses the whole substance of the limb, and cannot, therefore,

be employed for any length of time, for fear of gangrene; it cuts off and prevents the collateral circulation, for want of which the limb perishes; it may, and often does, cause phlebitis; it usually causes an intolerable degree of pain, and, therefore, cannot be borne for any considerable length of time; and lastly, if employed in cases of amputation, by paralyzing the muscles it prevents their proper retraction. These objections apply to it even when modified, as it often is at the present day, by attaching to it a pad, to be placed over the artery, at the base of which is attached a ring through which the strap is made to pass, a firm compress, or bit of curved horn or metal, to be placed over the opposite side of the limb to diminish the pressure; a strap, and something by which the loop may be twisted. Thus constructed, and the pad properly adjusted, the cap of metal is placed on the opposite of the limb, and the strap passed three or four times around the limb and tied, or firmly fastened. Then introduce the lever through the loop and rotate it until the requisite degree of pressure is obtained. The plates in the American edition of "Liston's Surgery," and Hamilton's "Military Surgery," show the different modifications of this tourniquet from the original "garrot" or "Spanish windlass," to the improved instrument constructed by George Tieman, of New York. The most that can be said in favor of this mode of arresting hemorrhage is, that it is, perhaps, better than nothing; it may be useful in an emergency, when no better means are at hand, but should never be employed when a proper tourniquet can be obtained. But it can be made to appear, were it necessary, that the objections to the use of this instrument, already alluded to, will apply with greater or less force to all the tourniquets hitherto introduced either in the army or civil service.

The following remarks of the late eminent surgeon, George McClellan, M. D., of Philadelphia, the father of Gen. McClellan, now at the head of the U. S. Army of the Potomac, are too important to be omitted in this connection: "Hemorrhage is the most serious of all the complications of gunshot wounds. *More lives are lost from it, either directly or indirectly, than from all the other circumstances combined.* The usual practice on the field, is to check immediately by the application of a tourniquet, or some extemporaneous substitute, which answers a temporary purpose, at the expense of a most injurious congestion of the wound and all the parts below. When, after a long delay, and, perhaps,

transportation of the sufferer to a distant rendezvous, the strangulating ligature is removed, and the bleeding orifice sought for, the most embarrassing difficulties have to be encountered by the operator. from engorgement and coagulation of blood, among the injured parts. Even provided the wounded artery then be found and successfully tied, the most unfavorable conditions of things will be presented for the restoration of a sound circulation, and reparatory efforts among the injured parts. In hot weather especially, vascular engorgement, tumultuous excitement and mortification, are insured by such a rude and mechanical treatment. The surgeon would, in general, do vastly better by leaving the wound in the hands of nature, under such circumstances, and endeavor to assist the propitious syncope by maintaining the head and shoulders for a while, in an elevated position, and applying cold fomentations to favor contraction of the vessels and coagulation of the blood, than injure the vitality and organization of all the textures in the wounded limb. There can be no doubt of the superiority of the French practice on the field of battle, as instituted by Larrey, to take up the wounded arteries at once by a prompt operation, if the severity of the hemorrhage appears to require it."—(*Princ. and Prac. of Surgery.*" Phil. 1848.)

The force as well as truth of these remarks will be acknowledged by every surgeon who has seen the effects of the common field tourniquet, when applied for any length of time; and no one will hesitate to agree in the opinion, that it would be far better to leave such cases in the hands of nature. But in regard to the French practice, or rather that recommended by Larrey, of tying the arteries at once on the field, it has never been carried out on account of its impracticability. Where numbers lie wounded and bleeding, some temporary expedient must be resorted to to check the bleeding, until they can be removed to some safe and convenient place for the surgeon to operate. These means must, of necessity, be for the most part, in the hands of other persons than surgeons. Even in the British army, where there are 56 surgeons, including 14 dispensers, to a division of 10,000 men, or one surgeon to 178 soldiers, instead of one to 500, as in the army of the United States, such a practice as that recommended by Larrey, has been found wholly impracticable.

All other tourniquets in use are only modifications of this original instrument of Morel; such as Petit's or the "Screw Tourniquet," the English and French field tourniquets, the

"Clamp" or Horseshoe Tourniquet," "Dupuytren's Compressor," "Charriere's Tourniquet," "Skey's," "Oke's," "Moore's and "Tyrrell's" tourniquets, etc. As these are all unsuited to, and never employed in armies in the field, we need not dwell on them, especially as they are described in many accessible works on surgery, which also contain illustrative plates of the same instruments. Moreover, the same objections apply to nearly, if not all of them, as to the common field tourniquet, already considered.

PETIT'S TOURNIQUET.

The tourniquet of Petit is not only the instrument usually employed in operations on the extremities, in ordinary civil, but it has also been recommended for field use. It consists, as is well known, of two plates regulated by a screw, a strap and buckle, and a compress. In choosing this instrument, it is important to see that the teeth are perfectly round; otherwise, as soon as the screw is tightened, the edges of the tongue will cut the strap, and thus prevent the necessary constriction of the limb. In applying it, the plates are to be placed in contact, a firm compress laid over the part of the vessel to be compressed, the pad upon this, and the frame (beneath which a firm compress should likewise be introduced) upon the upper or outer portion of the limb, so that it can be readily managed. The instrument is tightened by turning the screw, which separates the plates, and relaxed by bringing it back by reverse turns toward its first position. This tourniquet is altogether unfitted for use on the battle-field, as it cannot be applied with facility, nor by the wounded person himself; and as generally employed, even by the surgeon, it is apt to arrest the circulation in the whole limb, or cause phlebitis. Even in ordinary cases of amputation, there are so many objections to its use, that surgeons have very commonly laid it aside, and trusted to compression of the artery by the thumb of an assistant. The remark, however, of Liston will ever hold true, viz.: "That no surgeon, when about to perform a capital operation, should rely upon this method alone; for his assistants may become fatigued, or nervous, or may apply the pressure irregularly, and thus place the life of his patient in jeopardy. Hence, there ought always to be at hand a tourniquet or compressor, or something of the kind."

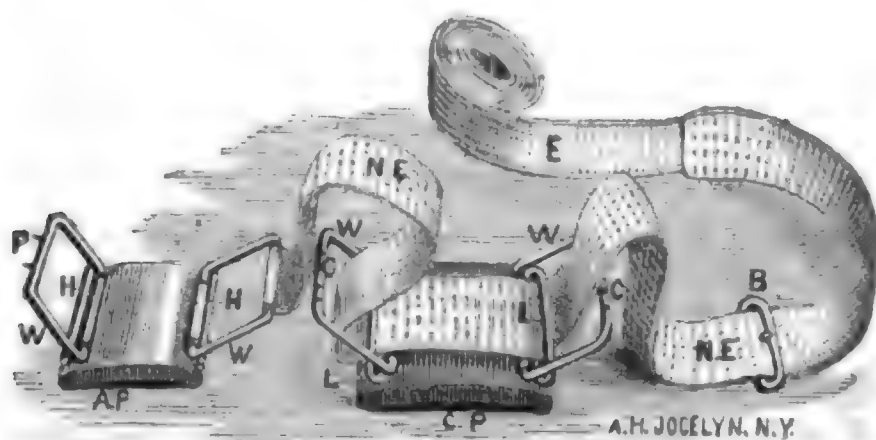
It is remarked by Macleod in his "*Notes on the Surgery of the War in the Crimea*," that it has been the experience of most wars,

certainly of the late one, that tourniquets are of little use on the battle-field ; for though it is unquestionable that a large number of the dead sink from hemorrhage, still it would be impossible, amid the turmoil and danger of the fight, to rescue them in time ; the nature of the wounds in most of these cases causing death very rapidly."—(P. 127, Am. Ed.) This may be true as regards the tourniquets in present use in the British and French, as well as in the American armies ; and, indeed, the writer was informed by a brigade surgeon, who was at the battle of Bull Run, where more than two thousand were wounded, that the use of the field tourniquet was so frequently followed by mortification and the loss of the limb, that he had come to the conclusion, that it was far safer to leave the wounded to nature, without any attempts to arrest the flow of blood, than to depend on the common army tourniquet. It may be, and probably is, true, as a general rule, that where large arteries are wounded, death is apt to occur very speedily ; but both Larrey and Colles relate instances in which, by prompt assistance, death was prevented in wounds opening even the carotid artery. Equally prompt assistance would, no doubt, prevent a fatal result from wounds of the femoral, brachial, and other large arteries.

THE ELASTIC TOURNIQUET.

The newly invented Elastic Tourniquet, known as "Lambert's Tourniquet," is believed to possess very important advantages over all other instruments of the kind, for the use of armies in the field, and also, for all the ordinary purposes for which any tourniquets are ever employed. Such is the opinion of the most eminent surgeons in the United States, as may be seen by referring to the testimonials in the Appendix. These are selected from a large number, and it is presumed will be considered as decisive in regard to the merits of the new invention. It is not expected that it is about to create a new era in the history of military surgery ; but it is believed that the extensive introduction of the new tourniquet into modern armies, in sufficient quantity to supply the wounded, will greatly diminish the number of deaths in proportion to the wounded, and thus save thousands who otherwise would perish. This instrument had not its origin in any mercenary or selfish considerations, but in a sincere and heartfelt desire to discover some more available and successful method of arresting the flow of blood on the battle-field than

those in general use. It is the fruit of much thought, and many experiments; fifteen different forms and modifications of the instrument were constructed before it took its present shape. Though pronounced perfect by some excellent judges it is very possible that it may be found susceptible of improvement. It is, however, claimed for it, that under its present form, it is far superior to any other contrivance hitherto introduced for the same purpose. The recent adoption of this tourniquet by the United States Government, and its introduction into army use as a *field tourniquet* by Surgeon-General Finley, under the advice of a board of experienced army surgeons, especially convened to decide upon its merits, (and who reported unanimously in its favor,) must be regarded as very satisfactory evidence of its superior excellence, and its adaptation to the end in view. A slight examination will show that it is no less well adapted to civil than military use.



Lambert's Elastic Tourniquet.

The *Elastic Tourniquet* may be described as consisting of two concavo-convex pads of plate tin, the larger, (see plate) CP, $2\frac{3}{4}$ inches in length, and 2 in width; the smaller, AP, is 2 by $1\frac{3}{4}$ inches. These pads are connected by a piece of non-elastic webbing, NE, about 21 inches in length, and $1\frac{1}{2}$ in width. They are furnished also with wings, W, to take off all pressure from the limb, except where the pads are placed. These wings are attached by hinges, to facilitate compact packing. The inelastic band, NE, is attached by one end to the narrower wing of the smaller pad, while the other end passes over the wings of the other pad, and under its loop, L, and then through a buckle, and is attached to the elastic band, E, the counteracting pad, CP, should be opposite to the arterial pad, AP; hence CP is moveable on the inelastic band, NE.

To apply the tourniquet, place the small pad with the pointed

wing up over the artery to be compressed; slip the large pad on the band, so that its wing nearly touches the wing of the small pad, as in fig. V; then bring it upon the limb, till opposite to the small pad, as in fig. 6; then pass the band through the free or pointed wing, P, of the small pad, and draw up the band till snug, where it may be held by the points, or it can be passed through the buckle, and there fastened. It can be readily drawn tight enough to arrest the current of blood by these means alone; but it is better to merely draw the inelastic snug, and let the points hold it; then pass the elastic band around in the direction shown in figs. 3, 4, 7, and fasten the end by tucking it under one of the turns. The power with which the elastic will act, will depend upon its tension. If the greatest power is required, it should be put around and stretched to its utmost; but usually two or three turns, moderately stretched, will be sufficient. If the flow of blood be so rapid as not to permit the application of the pads at first, the elastic alone, wound around, well extended will stop the flow, and can be applied in an instant; after which the pads of the same tourniquet can be properly applied.

(Fig. 3.)



(Fig. 4.)



In some instances a piece of compressed sponge, or a compress, may be applied directly to the wound, and confined there with the smaller pad, with the usual effect of arresting the hemorrhage.

When it is desirable that the smaller pad should be convex, a common bandage roll can be easily applied and fastened either across, or in the direction of the artery, by a few turns around the limb; then place the pad over it, and make compression as before. A little practice will enable any person to apply this instrument with entire success

(The accompanying plate shows the Tourniquet when applied to the arm or leg.)

to his own limbs, it being readily adjustable to any requirement. When it is desirable to make pressure on the main artery of the arm, to arrest hemorrhage from any part below, the person may be very safely guided by the inner seam of the coat, at the upper part of the arm, a little more in front near the elbow; while half-way between the inner seam of the pants and the top of the thigh, at its middle, is a good guide for making pressure upon the main artery of the lower extremity.

NOTE. *To fold up the instrument so as to be contained in the box:* Slip the large pad on the non-elastic within three or four inches of the elastic; then wind the elastic (the wings being closed) twice around the large pad, holding it all the while in the left hand; then bring the concave surfaces of the two pads together, and fold up the non-elastic, and fit it snugly within and over the wings of the small pad; then wind the elastic around both pads, and tuck under the end, when it will be found to fit the box.

USE OF THE ELASTIC TOURNIQUET ON THE BATTLE-FIELD.

The advantages of this tourniquet over all others hitherto in use, are obvious upon slight inspection. They consist in its simplicity of construction; its ready adaptation to the limb, even by the wounded person himself; its perfect security and efficiency; the comparative ease with which it may be borne for many hours, or even days, if necessary; its non-interference with the collateral circulation, which goes on as usual, thus not endangering the loss of the limb; and, lastly, its freedom from any danger of exciting inflammation and suppuration, or phlebitis, so often caused by the ordinary field tourniquet. Although it is believed to be more especially adapted to the field, yet it is remarkably well adapted also to the treatment of aneurism by compression, as well as to ordinary cases of amputation, &c.

The question naturally presents itself, in connection with this instrument, how many of them should be supplied to an army in actual war? Besides the few field tourniquets in the hands of medical officers in each regiment, each soldier in the Russian, Prussian and Austrian service, is furnished with *a simple strap and buckle*, with directions to apply it firmly on the limb between the wound and the heart, in case of a wound attended with hemorrhage; and in the British army, in the Crimean war, each medical officer (according to Sir John Hall, "Inspector General of Hospitals,") or his orderly, carried *three or four tourniquets*

along "to restrain any alarming hemorrhage," while "each soldier *was furnished with a bandage and piece of lint*, as part of his equipment, and these he was directed to carry about his person, so as always to have them ready for use in case of their being required." This provision, it would seem, was the main dependence in the British army against sudden death from bleeding of wounds on the battle field, for the number of tourniquets provided was wholly inadequate. According to the British Army Regulations, the supply of tourniquets for a division of 10,000 men for three months, is as follows: Two Signorini's tourniquets, forty field tourniquets, and ten screw tourniquets: total, fifty-two; or one tourniquet to 176 men. This shows that the main reliance, as a temporary expedient, was the bandage and lint. Moreover, it is not easy to see how these are to be successfully applied by the wounded soldier himself. Nor need we dwell on the great danger of cutting off the entire circulation of a limb by an inelastic strap or cord, or by the ordinary tourniquet at present in use in the United States army. We are aware that there is a very general prejudice among army surgeons against all tourniquets on the battle field; and this arises from the fact that so many limbs, if not lives, have been lost from the entire strangulation of the limb, and the severe pressure applied by the pad. These results, however, are avoided by the use of the Improved Elastic Tourniquet. A few simple directions from the regimental surgeon or assistant, will be sufficient to enable any common soldier, of ordinary intelligence, to apply the instrument successfully to either the upper or lower extremity, in case of being wounded; and then it may safely remain on the limb for hours, if necessary, before the vessel is secured by ligature. Hence, Dr. Mott remarks that "the value of the invention is, that the wounded man himself can apply it. The common tourniquet, the stick and clamp tourniquet, require a second person to assist in their application, and before this can be rendered an abundance of soldiers have, and will continue to perish from the loss of blood. While the circulation through the principal arterial channels is interrupted by this instrument, the collateral supply will go on to a sufficient extent to prevent the limb below from perishing. Every officer in our army, from the lowest grade to a general, should have one, and at their leisure moments teach the men of their regiments how they are to be applied."

THE USE OF THE ELASTIC TOURNIQUET IN THE TREATMENT OF
SECONDARY HEMORRHAGE.

Secondary hemorrhage is of not unfrequent occurrence after gunshot wounds; but we have no reliable statistics to show what is the number absolutely or proportionably to the whole number of the wounded. A very proper distinction has been drawn between *secondary hemorrhage*, proceeding from sloughing and ulceration, and that from increased arterial action, which occurs at different stages of the treatment. The first kind, viz., that from sloughing, occurs, of course, at a comparatively late period. Guthrie says from the 8th to the 20th day; Dupuytren from the 10th to the 20th; Hennen from the 5th to the 11th; Roux from the 6th to the 20th; Macleod from the 5th to the 25th, but most usually about the 15th day after the injury.

Consecutive or secondary hemorrhage may arise from small vessels, and be easily arrested; or, it may spring from a large vessel, and prove suddenly fatal. No one severely wounded by gunshot can be considered safe till the wound is healed. In such cases the military surgeon is directed by Bell, Guthrie, and other writers, to tie both ends of the bleeding vessel, as the best mode of checking the hemorrhage. But if the bleeding occurs at a late date, as Macleod has remarked, the limb is so much swollen, its tissues infiltrated, matted together, and disorganized, that it will be found difficult to do this; and the artery, moreover, is apt to be in an unnatural state in suppurating wounds, as recently shown by Nelaton. Here *compression* comes in as an indispensable temporary expedient, whether the trunk, from which the bleeding proceeds, has to be tied or not. It is for such cases that Sir John Hall (Inspector General of hospitals during the war of the Crimea,) recommends that "compressors" should be supplied to the army; and he remarks, "these are frequently of great value in suppressing secondary hemorrhage, when the common tourniquet could not be used without injury, and where ligatures are applied with difficulty and uncertainty." Here the elastic tourniquet will be found to possess important benefits over any of the "compressors," so called, whether "Coste's," "Dartnell," or "Charriere's," etc.

Again, there are cases where there is obstinate hemorrhage from stumps after amputation, which is treated by some surgeons by tying the main artery above the extremity of the stump, but

usually with unfortunate results. Macleod recommends, as a mode of practice supported by very extensive observations, that well-applied pressure should be made on the principal vessel, so as to diminish the circulation through it; and this he pronounces the most successful treatment. This pressure is very generally made in the British army practice, by the common screw field tourniquet, shifting the compressing force carefully from time to time. The objections to this instrument, as a mode of making pressure to any length of time, we have already considered. It is sufficient to add, that they do not apply to the new American tourniquet.

USE OF THE ELASTIC TOURNIQUET IN AMPUTATIONS.

The tourniquet has been laid aside by some surgeons of late years, in amputations of the thigh and arm, and compression by the hands of an assistant substituted. In the lower extremity this is done by pressing the femoral artery against the brim of the pubes; and in the upper extremity by compressing the subclavian against the first rib, or the brachial against the shaft of the humerus. Erichson advises that the pressure should be made by grasping the limb with one hand in such a way that the index and middle fingers bear upon the artery, and press it directly against the subjacent bone; and if the limb be large, or if long continued pressure be required, the same fingers of the other hand should be firmly applied upon those that are already compressing the vessel. But the same writer remarks, that "in most cases, in which temporary compression of the artery is required, the *tourniquet should be employed*. It is far safer to trust to this instrument than to the hands of an assistant, however steady and strong. When the tourniquet is applied with a sufficient degree of tightness, the whole circulation through the limb may be completely arrested. *This can never be done solely by the compression of the main trunk*, the collateral and minor supplying vessels conveying blood into the limb independently of it. Then again, if the operation be unexpectedly protracted from any cause, the fingers of an assistant may tire or stiffen, and, by relaxing the steadiness of their pressure, allow hemorrhage to ensue. For these reasons surgeons almost invariably employ the tourniquet in amputations; and even the late Mr. Liston, who, at one period of his career, discarded this instrument, commonly employed it during the latter years of his life."

Erichson recommends that "Petit's Tourniquet" should be employed in these cases; which consists, as we have seen, of two plates attached to a band that is buckled round the limb over a pad that has previously been applied above the artery to be compressed. In applying this tourniquet, we are directed to take especial care not to screw it up till the very moment that the compression is required, and then to do so quickly and with considerable force, lest venous congestion of the limb take place, by the veins being compressed before the circulation in the arteries is arrested. It is obvious, however, that this cannot be effectually done, where the screw tourniquet is employed, as too long a time elapses before the artery is effectually closed; whereas, in using the "Elastic Tourniquet," the compression of the vessel is instantaneous. If it is desirable to compress the collateral vessels, and thus entirely command the circulation, the instrument should be employed *without expanding the wings*, when the object will be perfectly attained; or, the larger pad may be detached entirely by slipping off the band; then, placing the smaller pad over the artery, surround the limb with the elastic, and draw it suddenly with force enough to compress the vessel. To ensure perfect security, the band should be passed three times around the limb, and secured in the usual manner, by tucking under its end, or fastening by the buckle.

Dr. Reese, the late able editor of the American edition of Cooper's "Surgical Dictionary," objects very strongly to the use of the tourniquet in amputations, as calculated to increase the quantity of blood lost, and remarks that many American surgeons, on this account, dispense with its use altogether. "On the first application of this instrument to the thigh," he remarks, "the compression is made on the superficial veins, the return of the blood prevented, and the morbid state of the limb often favors the consequent engorgement. *As the instrument is screwed*, the turgescence of the limb below the point at which the compression is made continues to increase until the circulation is stopped. No sooner is the incision made, than a hemorrhage of a very considerable extent takes place, and the assistant is directed to tighten the instrument, which fails to suppress it, because the blood flows from the vessels of the limb below the incision, thus unnaturally distended. Every operative surgeon must have suffered inconveniences, and often anxiety, from this source, and yet few have blamed the tourniquet, which is the true cause of

the mischief." The employment of the "Elastic Tourniquet" obviates all these objections, which are to a greater extent well founded, when any of the ordinary tourniquets are employed, but which disappear by the use of the new instrument.

It may, perhaps, be thought that the Screw Tourniquet has some advantages over the present one after amputation, inasmuch as the blood vessels may so easily be discovered by the gradual reversal of the screw. But the same result can be attained by a very slow relaxation of the elastic band, and then tightening it again; and this may be done with even greater facility, and less trouble and risk, than with the screw.

USE OF THE ELASTIC TOURNIQUET IN THE TREATMENT OF ANEURISM.

The treatment of aneurism by compression dates back to the close of the 17th century. The pressure was then made directly on the sac, and many cures were made by this mode of treatment; but it proved to be not only uncertain, but dangerous, owing to the irritation and inflammation set up in the sac: hence it fell into comparative disuse. A modification of the plan was afterward introduced by the French surgeons, by laying upon the sac and making pressure directly on the ends of the vessels. These methods were replaced in the last century by the Hunterian method of ligating the artery affected, which was found to be easier and more successful. In 1810, Pelletan and Dubois first tried the plan of making pressure on the artery above the sac, instead of upon the aneurism itself; but the Dublin surgeons, Bellingham, Hutton, etc., first established the true principles on which this treatment by compression rests, and gave it a definite place in surgery. They showed that it was not necessary *to arrest the whole flow of blood* through the main artery leading to the sac, by making such a degree of pressure as to set up inflammation in the vessel; thus causing its obstruction by the effusion of lymph. The opposite view had, before this time, led to such forcible pressure as to cause great pain, and often leave sloughing of the skin, and other unpleasant results, in consequence of which, the treatment was almost wholly abandoned. It was now clearly established, that it was only necessary *to lessen* the quantity and force of the blood in the vessel, by a *moderate degree* of compression, and the cure was effected by the deposit of stratified fibrin in the sac, and its consequent consolidation, aided by the con-

traction of its walls. The formation of laminated fibrin in the sac would, indeed, seem to require the presence of a certain amount of blood, and it is found in these cases, where a cure has resulted, that the artery is in no way injured or obliterated.

It is only necessary to make *moderate, but steady and uniform, pressure* on the main artery leading to the sac, to effect a permanent cure; but it will be facilitated by making moderate pressure, also, on the tumor itself. This can be done by adapting to its entire surface a piece of tin or sheet lead, fitting closely, and then applying the pad over it; thus making the uniform and moderate pressure required. If the aneurism be *popliteal*, the pad of the other instrument should be applied about the middle of the thigh, and the limb placed on pillows, the patient being confined to a lounge or bed. The same course would be proper if the aneurism be seated anywhere in the lower extremities. The compression exerted on either of the pads should be but very moderate. The advantage of this instrument over "Dupuytren's Compressor," "Charriere's," the "Horseshoe Tourniquet," or "Petit's," in such cases, consists in its greater simplicity and more ready adaptation, more accurate adjustment of the compressing force, avoiding an injurious degree of pressure, better accommodation to the limb, and especially in substituting an elastic force for the unyielding pressure of the screw, as it has been found that the pressure of a weight of four pounds, laid on the artery as it passes over the pubis, is sufficient to control the circulation through the vessel sufficiently, and as each turn of the vulcanized India-rubber band, fully extended, makes a pressure of at least that amount, and occasions scarcely any inconvenience whatever, it will be seen how well adapted this instrument is for the management of such cases. It is now well known that the pressure or force required to arrest the flow of blood in an artery is comparatively trifling to what was formerly supposed; and Macleod remarks, that "Guthrie did good service to surgery by showing *how small a force* can obstruct a vessel of the first order. He thereby gave courage and confidence to both surgeon and patient."—("Notes on the Surgery of the War in the Crimea," by G. H. B. Macleod, M. D., London, 1858.)

The chief point requiring attention is to control the circulation sufficiently with the minimum of pressure. This may be done by one tourniquet, over the main artery, or two instruments may be employed, one over the tumor to approximate its

sides, the other at a convenient distance from it, to lessen the amount of blood passing through the artery, the pressure made by each may be less than if only one is employed. The pressure over the tumor should be just sufficient to check all pulsation, but not so much as to arrest all circulation through it. If any pain should result from the pressure of either instrument, one may be loosened for a time, and, if necessary, the other perhaps tightened; thus *alternation of pressure* can be kept up without much pain or inconvenience, and this can be done by the patient himself after proper instruction. The pressure need never be sufficient to prevent sleep; if it should be, it must be lessened. One, or even both pads, may occasionally be removed entirely, for a time, without preventing consolidation of the sac. This solidification, however, of the sac, however produced, is necessarily attended with more or less pain and constitutional disturbance, which may require opiates or other remedies.

The duration of the treatment varies considerably in different cases, from a few hours or days to three months or more, depending on the constitution of the patient, state of the tumor, &c. The average time is about eighteen days, where continuous pressure is kept up.

This treatment is chiefly applicable where the aneurismal tumor is situated in the arteries of the lower extremity, below the middle of the thigh. When it is situated near the trunk, as in the iliac, carotid, subclavian and axillary arteries, it is of course entirely inapplicable. It might be employed with advantage in aneurism of the brachial artery. It will be seen that the objections which have heretofore been raised against the treatment of certain aneurisms by compression, are chiefly, if not altogether, obviated by the use of this instrument.

As to the comparative success of the two methods, as hitherto employed, *i. e.*, of compression and ligature, even when very objectionable modes of pressure have been employed, statistics show a vast preponderance in favor of the treatment by compression; inasmuch as we avoid, by this plan, all danger of gangrene, erysipelas, secondary hemorrhage, &c. And even should compression fail, we may then resort to the ligature, and even with better chances of success than if it had not been employed; inasmuch as the pressure causes an enlargement of the collateral vessels, thus lessening the tendency to gangrene. Besides, there are many cases where the disease occurs in broken and unhealthy

constitutions, or complicated with heart disease, where the ligature would be inadmissible. In all ordinary cases then, of femoral, popliteal or brachial aneurism, compression by the "Elastic Tourniquet" will be, at least, equally expeditious, and far safer and more successful than treatment by ligature.

THE USE OF STYPTICS AND ASTRINGENTS, FOR THE PURPOSE OF ARRESTING HEMORRHAGE FROM WOUNDS ON THE BATTLE-FIELD AND IN CIVIL SERVICE.

To restrain hemorrhage from wounds, &c., "styptics" have always been more or less extensively employed. In former times they were relied on almost exclusively; but from the fact that they nearly all, certainly the more powerful, produce a more or less stimulant impression, and thus frequently lead to inflammation, suppuration, and a tedious cure, they probably, on the whole, do more harm than good; they certainly should never be employed where it is preferable to avoid their use. The only cases in which they can be recommended, are certain capillary hemorrhages, as where refrigerants have failed, and the other means of arresting the flow cannot be readily brought to bear. The French surgeons employed to some extent, during the late Crimean war, solutions of the persulphate, perntrate and the sesquichloride of iron, injecting them into wounds, &c., and the same practice has been recommended and resorted to by some of our army surgeons during the present civil war. Thus, Dr. F. H. Hamilton, U. S. A., in his recent work on military surgery, speaks of injecting the persulphate of iron, diluted one-half or more, into a deep wound, by a syringe, or applying it undiluted, on an open bleeding surface; at the same time, he states that he has seen it thus injected, produce erysipelatous inflammation. But whether these preparations of iron, &c., do produce violent inflammation or not, they will certainly prevent union by the first intention, and thus delay the cure. This treatment is not only coarse and unscientific, but highly dangerous. If used at all, they should be chiefly used in bleeding from spongy parts, and from cavities and organs to which other applications cannot readily be made. The following extract from a letter recently received by the writer, from Dr. Powers, assistant surgeon, 75th regiment N. Y. volunteers, at Fort Pickens, will serve to show the danger of applying powerful chemical styptics in deep-seated wounds: "One of our men, a private of the 6th, was wounded

in the calf of the leg with a piece of shell. The wound seemed but trifling when they brought him into the hospital; but as the hemorrhage was somewhat profuse, the surgeon of the 6th enlarged the opening, and applied perchloride of iron. The next day the foot grew cold, the pulse rapid, and there was some delirium. Stimulants were given freely, but the next day extensive gangrene of the leg came on, when the leg was amputated at the middle of the thigh; but the poor fellow never rallied, and died in an hour and a half. On examination, the peroneal artery was found to be divided, and a small piece chipped off the neck of the fibula."

"Blood stanching with styptic remedies," says Chelius, "is uncertain, and as regards the healing of the wound very injurious." Again, he remarks: "The objection to styptics, of whatever kind, is that sloughing to a greater extent occurs after their use, than after the mere application of pressure."—("Surgery," Ed. by South., Am. ed., p. 333.)

The above remarks apply only to the chemical styptics, such as the salts of iron and the other metals; alum, creosote, turpentine, &c. Those that act mechanically, such as compressed sponge, agaric, cobweb, hat and hare's fur, lint, dry powders, &c., which adhere to the bleeding surface, and, being porous, allow the serous portions of the blood to drain away, but retain the fibrinous, thus hastening coagulation, are not liable to the same objections. They are, however, only useful when small vessels are wounded, and are always uncertain and unreliable. In all cases, compression by the elastic tourniquet will be found easier, more certain, and far more successful. As to other measures for checking hemorrhage, such as the actual and potential cautery, refrigerants, &c., they are only of exceptional use even in civil practice; on the battle-field they are of no use whatever.

Article 20. Caries of Elbow Joint, Operation of Excision, with recovery of useful arm. By N. C. HUSTED, M. D., New York city.

The patient was Miss D——, aged 14 years; of leuco-phlegmatic temperament, and scrofulous diathesis. She had been afflicted for several years past with an affection of the left hip joint, of a doubtful character. In the month of April, 1860, while on a visit to the country, she fell heavily in running down a hill, and severely bruised the right elbow. At first the injury was not considered grave in character, but soon active inflammation supervened, which continued for a length of time previous to consulting any medical advice. I first visited the patient in October, 1860. At this time her general health was much impaired, and the constitutional disturbance very marked. The elbow was evidently the seat of ulcerative inflammation, and presented the following conditions: The tumefaction of the elbow was moderate, with the surrounding tissues thickened and indurated. At the posterior aspect of the joint, directly over the olecranon, the integument was in a sloughing state.

There were several sinuses also near the internal and external aspects of joint posteriorly, which were discharging a thin, glairy, ill-formed pus. Explorations with the probe detected diseased bone, and through one of the sinuses the instrument passed readily into the joint, and also encountered roughened bone. The fore-arm was flexed on the arm, nearly to a right angle, with the flexors contracted and rigid. There was not ankylosis however, although any attempt at passive motion of the joint caused excessive pain. The patient complained of great tenderness of the elbow, and complete inability to move it. I ordered the patient the following treatment, which was addressed to remove the marked cachexia; syr. ferri iodidi with oleum jecoris aselli, and locally to the joint I applied stimulating dressings. Soon after several small spicula of carious bone were discharged through recently formed sinuses, resulting from

small abscesses over the olecranon, opened with the lancet, and under the persevering administration of the above remedies, the patient soon began to improve in her general condition, and the activity of disease in the joint diminished. The tenderness and tumefaction of the elbow subsided; the suppuration rapidly decreased, not disappearing entirely, however, and movements of the joint to a very limited extent could be borne by the patient with cautious manipulations. The relations of the joint now assumed the following condition: The fore-arm was flexed on the arm to an obtuse angle, and there was partial pronation with the characteristic abnormal contour of the elbow, so marked in ulcerative affections of this joint. The contracted flexor muscles connected with the joint, were still rigid and unyielding. The integument over the posterior aspect of the elbow had cicatrized, with the exception of a sinus, which discharged slightly at intervals. Her general health having sufficiently improved, I decided to perform the operation of excision of the elbow joint, from the fact that the local lesion did not improve "*pari passu*" with the general health.

On the 28th day of September, 1861, I proceeded to perform the operation, assisted by Drs. J. R. Wood and J. K. Merritt. The patient was readily brought under the influence of sulphuric ether. I then proceeded to make the single straight incision, four and a half inches in length, over the olecranon, after the Langenbeck method, avoiding, however, the cicatrized integuments as much as possible, which located the incision nearer the external aspect of elbow than recommended by this surgeon. The next step in the operation was carefully to dissect up either edge of the incision, closely following the surfaces of the bones involved in the joint, and denuding them of the periosteum, which was carefully preserved. After entirely exposing the olecranon and the condyles of the humerus posteriorly, the joint was strongly flexed, and about an inch of the projecting olecranon was excised with a powerful bone-forceps. This allowed the more easy dissection around the joint, and I then proceeded to free the articular ends of the humerus and ulna, by dividing the ligaments of the joint. The forearm was now forcibly flexed on the arm, which protruded the free extremities of the humerus and ulna through the incision, and facilitated the completion of the dissection of these bones on their anterior aspect, and liberated the head of the radius. I was very careful to preserve

as much as possible the attachments of the biceps and brachialis anticus. It was now found that the disease embraced the articular surfaces of the humerus and the structures of the condyles nearly as far as the shaft of the bone. The articular surface of the ulna, together with the structures of the olecranon and coronoid processes, were involved also in the disease, but the head of the radius was healthy. The protruding end of the humerus was firmly held by one of the assistants, and the integument being retracted and protected by a napkin, I excised the diseased portion just above the olecranon fossa with a small amputating saw. The excised portion measured about $1\frac{1}{2}$ inches. The entire ulna was then excised, at a point immediately below the base of the coronoid process. A thin lamina of the articular surface of the radius was next sawn off with a Hay's saw; and, finally, the sharp edges of the excised ends of the bones were very carefully rounded with the gnawing bone forceps. The ulnar nerve was preserved intact. The amount of the hemorrhage during the operation was very trifling. Only two ligatures were used. There was some general oozing of blood, which was arrested by the application of the liq. ferri perchloride (Dr. Squibb's) and ice. After keeping the wound open for five hours, Dr. Merritt and myself then dressed the wound, by introducing three silver wire sutures, with several silk ones intervening, and applying straps of adhesive plaster, which accurately apposed the edges of the wound, excepting the lower corner of it, this being left open to allow the exit of the subsequent discharge. The forearm was then flexed on the arm to a right angle, and both were carefully supported by pillows. Iced water dressings were applied, and an anodyne ordered if necessary. The patient had rapidly rallied from the effects of the anesthesia and operation, and after the dressing was in a very comfortable condition. The operation occupied about thirty minutes.

Sept. 29th. The patient had passed a very comfortable night; no anodyne given; moderate reaction had occurred, and the wound was in a very favorable state, the edges being well agglutinated together, the surface surrounding cool and only slightly swollen. There had been some oozing of blood from the wound during the night. The adhesive straps were divided to relieve the slight tension of the parts, and water dressings continued; low diet and sig. ammonia acetatis ordered.

Oct. 2d. Patient continues comfortable; constitutional disturbance quite moderate; the inflammation and swelling of the elbow considerable; slight oozing of a thin sanious discharge from wound; the old cicatrix of the adjoining integument vesicated and assumed a sloughy appearance. A number of silk sutures were removed, and the strips of adhesive plaster changed; water dressings continued; rest in bed enjoined. Limb still supported on pillows.

Oct. 8th. Patient remarkably comfortable; no fever; has a good appetite; sleeps well; the heat and swelling of elbow has subsided; wound has united well, except at either corner. This discharge, which has been somewhat profuse, is now healthy and moderate in quantity. The surrounding integument has assumed a better appearance. All the wire sutures were removed to-day; the silk sutures having been removed at previous dressing. The patient is now allowed to sit up in an easy chair, with the limb supported by the sling and a flexible cushion embracing the elbow, and extending upwards to middle of arm and downwards to the hand. Ordered a generous diet, and no inflexible splint was used. From this time the patient progressed favorably. When the wound had entirely healed, passive motion of the elbow was practiced regularly. The patient also was instructed to use the hand and move the forearm. At the end of two months succeeding the operation, the patient was able to dress herself, play upon the piano, and carry an ordinary size scuttle filled with coal. At the date of this report, which is four months after the operation, the condition of the patient and the elbow, are as follows, viz: Her general health is good, weighing twenty pounds more than when the operation was performed; elbow shows no tumefaction, no sinus, in fact a healthy aspect; flexion and extension quite perfect; pronation and supination nearly so; shortening two inches.

HISTORY OF THE OPERATION OF EXCISION OF THE ELBOW JOINT.

Dr. Richard M. Hodges, of Boston, has recently published a very creditable monograph on the excision of joints, which has embraced everything authentic and positive of this now established operation up to the present time. Dr. Hodges thus prefaces his excellent memoir, which gained the Boylston Prize for 1861—"Excisions of joints have been comparatively little practiced in the United States. The personal experience of any one

American surgeon in regard to them, is therefore of a very limited character; and American medical periodicals, or systematic writings, furnish but little material calculated to throw light upon the questions connected with this class of operations. British, and to a larger extent, European medical literature offer, however, a fertile field for their study. Owing their origin to an English surgeon, they have of late years been extensively practiced throughout the United Kingdom, and a great number of the cases in which the operation has been performed, have been published with more or less detail; but, with the exception of Professor Jeffray's translation, in 1806, of the cases reported by the elder Moreau, accompanied by a reprint of the two letters of Mr. Park, and the work of Mr. Syme, printed in 1831, the English language possesses no monograph on the subject of excisions.

On this continent the interest developed by the early experimental researches of Chaussier, Heine, and Wachter has found expression in the later writings of Reid, Wagner, J. F. and O. Heyfelder, Esmarch, Paul, Schillbach, and in numerous "inaugural dissertations." From these and other sources the following pages have been prepared. The history of the operation, as stated in Dr. Hodge's paper, dates back to 1758 or '59. The following are verbatim extracts from his pages. The case of Mr. Wainman, of Shripton, England, in which he sawed off the lower end of the humerus, just above the olecranon fossa, in a case of compound dislocation, is famous in the history of excisions for its very early date. The patient lived, and the limb was as flexible "as if nothing had ever been amiss." Mr. Justamond, of London, in 1775, had excised the olecranon and two inches of the ulna for disease, and that Mr. Tyre, of Gloucester, had cut off two and a half inches of the lower end of the humerus after a compound dislocation. These partial excisions are the earliest ones which were practiced upon the elbow joint." "The elder Moreau claims to have submitted to the French Academy, in 1782, (the same year in which Park suggested it,) a proposition to excise this joint. He did not operate, however, until 1794, when he performed the first complete excision of the elbow of which any mention is made. In June, 1797, the operation was performed by his son; Roux, who subsequently became one of its strongest advocates, operated for the first time in 1819. In 1817 or 1818, the elbow was completely excised for the first time for disease in England, by Mr. Josiah Stansfield, of Leeds, and in

1819 the operation was a recognized one in the infirmary of that town, having been performed by two others of its surgeons, Messrs. Chorley and Hey.

In February, 1823, the elbow was excised in Dublin, by Sir (then Mr.) Philip Crampton, and in 1828, by Mr. James Syme, in Edinburgh. The latter was so pleased with his success, that he declared that "carious joints might be cut into with the same impunity as ordinary abscesses, and cut out with no more danger than what attends amputation, or rather not so much, since the balance of action will be less disturbed, *cæteris paribus*, where the limb is allowed to remain." In 1831, this distinguished surgeon published a memoir on the "Excision of diseased joints," containing the records of seventeen cases of elbow-excisions—fourteen of which were his own. From this period onwards the annals of surgery furnish abundant examples, the gentleman just named having himself, in 1855, operated "more than one hundred times." In the United States, the elbow was first excised by Dr. John C. Warren, of Boston, October 16, 1834. The case was communicated verbally to Velpeau, who alludes to it in his *Medicine Operatoire*, but was never otherwise published. June 5, 1835, the operation was repeated by the late Dr. Thomas Harris, of the United States Navy; afterwards by Dr. Buck, of New York, in 1841, and by Dr. Pancoast, of Philadelphia, in 1842. It is mentioned, also, by both Jæger and Tobold, that a German, named Gröcke, in 1793, performed a partial excision of the elbow for a gun shot wound; the patient, a soldier, recovering at the end of five months with an anchylosed joint. But it was not till the Schleswig-Holstein war of 1848–1851, that this excision was really introduced and popularized in military practice, chiefly, as is generally admitted, through the exertions of B. Laugenbeck, of Berlin, and L. Stromeyer, of Erlangen, Surgeons-in-Chief of the above named campaign.

Dr. Hodges has concluded his history of the operation. "Excision of the elbow joint, has been performed for injuries, for disease, and for ankylosis, this being one of the two joints in the body to which, for the last named cause, the operation has been considered applicable." He then proceeds to consider these three causes or conditions to which the operation is applicable. "The elbow is the frequent seat of compound fracture and dislocation from various causes, and in battle, its exposed position in both loading and firing, makes it constantly liable to gunshot in-

juries. For such accidents, met with in civil practice, as from their extent or severity, require excision of the elbow, the operation has been performed with much success; the position of the patient afterwards, and the general character of the injuries, as compared with those occurring in military practice, simplifying considerably the choice between it and amputation." "It may be a question whether the operation is as properly applicable to compound dislocations, uncomplicated with fracture, as to compound and comminuted fractures. This point is not brought out by the cases above referred to, and I am not in possession of facts to illustrate it. The opinions of Dr. Hamilton, (p. 5) and of Mr. Hutchinson, are, however, strongly in favor of it, and the error, it seems to me, is liable to be rather on the side of reduction than on that of the operation." "The greater extent to which gunshot wounds are apt, as a rule, to involve the soft parts with the large vessels and nerves, or to splinter the bones, to say nothing of the unpropitious conditions for subsequent cure in which the patient is placed by the exigencies of a campaign, must often render the choice of operation difficult and embarrassing; far more so than in injuries of the shoulder, a joint which can, by its anatomical position, even under adverse circumstances, be kept tolerably immovable, and, consequently, free from many sources of after trouble, with much greater ease than the elbow. Either for this reason, or some other, injuries of the joint of the elbow less frequently do well after gunshot wounds than those of the shoulder. Larrey noticed how often tetanus followed them, and every surgeon is aware of their gravity." "The approval of and growing confidence in this operation, is shown by the fact, that in the Schleswig-Holstein campaign, for simple shattering of the elbow joint by bullets, without other complication, six amputations were performed in 1848, three in 1849, and none in 1850, excisions having taken their place. Of 40 instances of the latter during the years just named, 6 only were fatal. In one case, amputation, on account of gangrene, was subsequently performed, and one was still under treatment. The remaining 32 resulted in a more or less useful arm." "In amputations of the arm, performed during the above campaign, 19 out of 54 were fatal." "In the Crimean war, 22 excisions of the elbow were performed, of which 3 ended fatally; 2 deaths also occurred after secondary amputation. Of 153 arm amputa-

tions, 29 were fatal; of 33 primary disarticulations of the elbow, 28 were fatal, and 24 of 31 secondary disarticulations.

Grouping these cases, we have, excluding the one under treatment, and that in which subsesequent amputation was performed, sixty excisions, with eleven unfavorable results, or a mortality of 18.33 per cent., and adding the one excluded above, 208 amputations, with 48 deaths, or a mortality of 23.07 per cent. This gives a percentage of 4.74 in favor of excision." The Crimean war taught that "partial excisions, of which there were a good many cases, did not turn out, on the whole, at all so well as complete ones. They were more tedious, more liable to fail, and less satisfactory when they succeeded, than when the whole articulation was removed." "A single remark may be made with regard to treatment, and that is, that poultices are decidedly prejudicial applications in the class of cases which have just been discussed, adhesive processes being prevented by their use, and suppuration and ulceration being excited. Such is the opinion of Guthrie, Sir Astley Cooper, and of Mr. Hutchinson, in his paper already alluded to. My own observation is confirmatory of this conclusion. Their omission is, however, a matter of difficulty, so agreeable are they to the patient; their long employment should at least be prevented, and their use discontinued as soon as possible."

Second. Excision for ankylosis is noticed after this manner:

"Dr. John Rea Barton, of Philadelphia, in 1827, recommended removal of the ends of the bones of the elbow joint as a means of curing ankylosis, though an operation done by Texter in 1823, may perhaps have anticipated his suggestions. Of late years many surgeons have put in practice this method of treatment." Dr. Hodges then gives the cases of Messrs. Fergusson, Holthouse, Syme, Bickerstith, of Liverpool, and G. Buck, of New York city, and then concludes: "Although success is frequent, still, considering its uncertainties, the operation, it seems to me, can hardly be undertaken with propriety, except in cases where the arm has stiffened either in a straight position, or in one of extreme flexion; or unless some special circumstances in an individual's position authorize an experiment, the results of which may be only a renewed ankylosis." In reference to the third division under consideration, Excision for Disease, the Doctor gives a very full detail, from which I shall quote largely. He writes, "Thirty years ago, in all incurable diseases of the elbow,

the necessity of amputation was considered inevitable. Now, no excision has been so frequently performed as that of this joint, or with such generally successful results, and no capital operation has a more fixed and recognized position in surgery. At Guy's Hospital, for instance, amputation for disease of the elbow is so rare, that in five years but a single instance of it had occurred, though in the same period eight excisions were performed, with one death and one subsequent amputation; in the remainder, a good arm being preserved." "Ulceration of the cartilages and caries of the ends of the bones—'white swelling' in its varying forms—is almost the only affection for which excision of the elbow is ever contemplated. Its frequency in this joint, in the hospital just now mentioned, is as one to four of the hip and knee, which are the most often diseased. In cases suggesting excision, the existence of a certain amount of constitutional vigor, and the failure of patient waiting for a cure by nature, must be ascertained facts, as well as that the disease has reached an incurable state, either from utter want of all rational remedial means, or through their inability to arrest its progress.

That such a point has been attained, the eye and the hand of the surgeon can decide better than words can describe. There is one feature, however, to which Mr. Fergusson calls such special attention that I cannot pass it by. This is, to quote his own words, "an elasticity about the joint which can be appreciated by pressing the ulna against the end of the humerus, as also, by swinging the fore-arm laterally. If there is much mobility and elasticity under such movements, I consider the joint as most seriously involved, and that in all probability, the best treatment will be excision, for, when the above condition is present, I believe all hope of cure for years to come may be set aside."

Within certain limits the extent of the disease is not a hindrance to the performance of the operation. That the roughened and stalactitic state to which the shafts of the bones, in the vicinity of a diseased elbow, are particularly prone, resulting from contiguity to the centre of morbid action, is not an objection to excision, is most satisfactorily answered by the success with which it is performed.

It is a condition very different from caries itself, and the result of a process tending to limit rather than increase the disease. Although sometimes requiring removal, the outgrowth usually disappears when the source of irritation is taken away,

just as the thickened and indurated tissues surrounding the joint soften down and are replaced under a healthier action. The condition of the soft parts is, in fact, a more important point than that just considered ; for if it is such that they can only slowly assume a healthy state, it may lead to a return of the disease of the bones. Few cases, where the disease of the integument persisted after the operation, and the caries reappeared, are mentioned by Dupuytren as terminating finally in amputation, and a similar instance is cited by M. Thore; within a month of the excision the soft parts had relapsed into a most unhealthy state, and seven or eight months afterward the patient died. Upon one occasion M. Roux thought it necessary to cut the soft parts away largely, on account of their diseased condition, and trust to the slow processes of granulation for their restoration." "The histories of collected cases show that the sources of failure lie chiefly in the patient's general condition and tendencies; that the cases demanding subsequent amputation are few in proportion to the whole number of operations, and that death rarely occurs from causes connected with the excision itself." He then gives a table of 119 cases, and thus refers to it: "The foregoing table is made up from a great variety of sources, as the references prove. It comprises all the cases, which, with histories attached, have fallen within my range of research (excluding Mr. Symes's series), and the disease in every instance was 'white swelling' in some one of its various phases and stages. Of the 119 cases of which it consists, 80 were males and 38 females, the sex in one case not being mentioned. In only 73 is the side operated upon reported, and of these 48 were of the right and 25 of the left. The age of the oldest patient, of those where it is stated, was 74 years, and of the youngest, 14 weeks; both of these recovered, the former with a flexible elbow but stiff fingers, the latter with a useful arm." "A fatal termination occurred in 15 cases," and "in 15 cases subsequent amputation was rendered necessary," and he states the causes for those unfavorable results. He proceeds to notice then the successful cases as follows: Of the 89 cases recovering without amputation, 77 regained useful arms. In 8 the operation was followed by ankylosis, the hand and fore arm remaining useful. One case at the end of eight months was unhealed and in a discouraging state; one at the expiration of 4 months was "unpromising," and one, with a movable elbow, had yet a stiff wrist; while in still another, the result was an

"indifferent one." And finally sums up the results of the operation for disease thus, "the degree of usefulness retained, varies from a condition where only the hand was serviceable, up to a perfection nearly equal to that of the natural state. Too great mobility sometimes impairs the servicableness of an arm as much as too great rigidity. Such a result appears to have occurred not unfrequently in the experience of M. Roux. Flexion is generally better performed than extension, whilst pronation and supination often remain quite perfect. A frequent test of strength appears to have been the carrying of a pail of water, and this seems often enough to be readily done. One of Moreau's patients ultimately threshed corn and held the plough. A patient of Mr. Key's became a letter-sorter in the post office.

A railway guard, operated on by Mr. Syme, says, he knows no difference in his two arms. A patient of Mr. Cock's, nine months after the operation, boasted that he could make more shoes in a given time than any man in London. In fact, in all successful cases, the ordinary occupations of life are resumed, and patients soon learn to accommodate themselves to the limitation of movements, which follows the operation. The perfect co-ordination of muscular action which characterizes the normal state of things, is almost always somewhat deranged. Flexion, for example, is accomplished in two steps; first the triceps contracts, the forearm is lifted, and a fulcrum obtained; the biceps then acts and produces flexion. These motions Mr. Roberts, who has called attention to them, says still exist in one of his patients, fifteen years after the operation, and are already apparent in another, which is only convalescing; they were also sufficiently distinct in a patient operated on by Dr. J. O. Stone, of New York. It has been alleged that, as a rule, young persons do best after excision of the elbow; there being in the adult a greater tendency towards ankylosis to overcome. This statement is not supported by the cases under consideration.

Dr. Hodge then proceeds to speak of the *operation and after treatment*. He begins in this wise: "The elbow may be excised by a variety of methods, the principal difference between which is in the incisions deemed proper. Perhaps the best is that of Langenbeck, of Berlin, consisting of a single straight incision, carried two inches above and below its extremity. It possesses the merit of simplicity, and of allowing the ready approximation of the edges of the incision without gaping of the wound. It is

only objectionable on account of the liability of the skin to tear whenever the soft parts are diseased or stiffened by infiltration, during the extreme flexion necessarily made in exposing the ends of the bones. It is, therefore, most applicable to excisions for traumatic cause. The addition of an external lateral incision, falling upon the centre of the longitudinal one, obviates the difficulty just named, and converts the operation into that described in the books as Jaeger's or Liston's." "The exposure of the joint should be so conducted that the sheath of the nerve, where it lies in the groove beside the olecranon, shall not be interfered with. The disorganization of the soft parts is sometimes so great, that the position of the nerve can with difficulty be decided upon, and its place only determined after the bones have been partly laid bare; the operation may, however, often be performed so that it is neither exposed nor seen. Although there is a possibility that sensation may be regained, even if the nerve has been divided, this ought never to be done, unless by accident, when prevention is so easy, and a cure so doubtful. In compound fracture of the internal condyle, the nerve is liable to be severed by the accident itself. When the bones are fairly exposed,—and this, owing to the shape of the articulation, is a dissection requiring time, and one of no little difficulty, especially about the inner condyle,—division of the lateral ligaments and conjoined tendons freely opens the interior of the joint.

"In a large proportion of cases only the surface of the articulation is diseased, and that alone need be removed. The extent of the excision, however, should be such that when the parts are brought together, the bones shall neither lock nor the transverse incision gape in bending the arm to a right angle. The insertions of the biceps and brachialis anticus muscles are to be preserved if possible, and it is to be remembered that, in dividing the ulna and radius low down, the interosseous artery is endangered.

"Four inches of bone above and four inches below the joint have several times been removed, and a useful arm left.

"In the excision of no joint for disease have partial operations been so universally condemned as in that of the elbow. Without an exception, all surgeons who have often operated decide against them. Among these may be mentioned Mr. Syme, Mr. Bickersteth, Mr. Erichsen and Mr. Fergusson.

"With regard to the length of treatment necessitated by the

operation, it will be found that months or years, or even a whole lifetime, may elapse before the occasional occurrence of small collections of matter in and about the joint will cease; but these rarely interfere with the patient's comfort, or affect the usefulness and strength of the limb."

He concludes the matter of treatment as follows:

"The 'time of treatment' is recorded in 77 of the cases of recovery included in my table. This has reference, not to the time when full usefulness of the limb was restored, but to the period during which the patient required surgical care, and at the end of which he was able to commence the use of his arm. This varies from four weeks to two years, and averages $175\frac{3}{11}$ days, or $5\frac{5}{8}$ months. According to Sansom, 110 days is the average duration of treatment after amputation of the arm."

The subject of *dissections* of the elbow, after the successful operation, is next considered. I again quote from this elaborate monograph. He states that: "In 1855, Mr. Syme, with all his experience, had seen but two dissections of elbow-joints after the lapse of any length of time from the excision. In one the operation had been performed ten months; in the other, which was followed by a most successful result, nine years had elapsed. In the first, 'the place of the extremities of the bones was occupied by a mass of strong fibrous tissue; closely resembling ligament, which allowed of motions in all directions. The triceps was attached to the posterior surface of this newly-formed ligament, and, through means of it to the extremity of the ulna.' In the second case, the ends of the bones were adapted to each other in such a way as to form a hinge-joint. There had been an extensive growth of bone and ligament, and the osseous surfaces of the new articulation were covered with a fibro-cartilage, or smoothed over by a porcellaneous deposit, and lubricated by a sort of synovia: the ulna and radius were received between two osseous processes, growing downwards from the end of the humerus.

"From the dissections collated by Albrecht Wagner, it appears that complete pseudarthrosis was found in but one case; in this the trochlea of the humerus appeared as perfect as if none of it had been taken away. In all the others, the bones were either rounded, and united by a fibrous medium, or more or less completely ankylosed from muscular adhesions, the shortness or density of the uniting fibrous tissue, the too close approxima-

tion of the bones from muscular contractions, or the formation of a superabundant callus. In no case had a new articular capsule been formed. The muscles had fixed themselves to the processes and irregularities of the bones, which had been gradually developed, and were generally atrophied, or more or less fatty. The nerves were softened, enlarged, and also fatty, and to this degeneration he thinks the loss of power in the limbs may be attributable.

"The regeneration of the removed bone, by preserving the periosteum, is a question still in abeyance, and requires the confirmation of dissections not yet made. M. Verneuil, well known as a careful observer, presented several cases of excision of the elbow-joint to the French Academy in 1859, to show that, by dissecting off and preserving whatever of periosteum the disease has left, the shortening ordinarily ensuing might be obviated. Thus, in one case where four inches of bone were removed and this precaution taken, the shortening was but two inches. In another instance a cylinder of periosteum was preserved with satisfactory results."

CONCLUSIONS.

The general conclusions drawn by Dr. Hodges in reference to the operation of excision of the elbow joint, I will now give in full, and acknowledge most cheerfully the great service he has rendered to the profession by his careful and learned exposition of this great improvement in the surgical art. His conclusions finally are these :

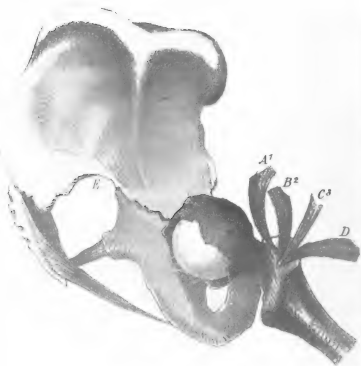
First.—That although partial excision had been practiced upon several occasions, and by Mr. Wainman in England, so early as 1758-59, the first complete excision of the elbow joint was performed by the elder Moreau in 1794.

Second.—That excision for traumatic cause appears to be a safer operation than amputation, and ordinarily preserves a limb of very considerable usefulness. This is especially true of those occurring in civil practice.

Third.—That excision for ankylosis is only adapted to cases where the arm has stiffened in a straight position, or in one of extreme flexion, unless special circumstances authorize the risk of an operation frequently ending in no improvement of the ankylosis.

Fourth.—That in excision for disease death occurs once in 7 14 15 cases; and that the operation fails of its primary intention—the riddance of the disease with the preservation of a useful arm—by death, amputation or other cause, once in 3 17-34 cases. Patients recovering are usually able to resume their ordinary occupations.

Fifth.—That partial excision, either for traumatic or organic lesions, is a frequent cause of unfavorable results.”



- A. Piriformis*
B. Gemellus Superior.
C. Tendon of Obturator internus.
D. Gemellus inferior.
E. Fracture

Article 21. Dislocation of the Femur into the Ischiatic Notch; Reduction by Manipulation; Death from Rupture of the Bladder; Dissection of the Hip. By JOSEPH C. HUTCHISON, M. D., Professor of Operative Surgery and Surgical Anatomy, Long Island College Hospital.

The chief interest of the following case depends upon the fact that an opportunity was presented for making a dissection of the parts injured by a dislocation of the femur backwards, after it had been reduced by manipulation:

Owen McLaughlin, a laborer, forty years of age, while engaged in shoveling coal, was struck over the lower portion of the back, while in a stooping position, by the bucket of an elevator which fell from a considerable height, crushing him to the ground, or as he expressed it, "as far as he could go." He entered the Brooklyn City Hospital, half an hour after the accident, while I was making my daily visit to the wards, with a dislocation of the right femur into the ischiatic notch. The limb was flexed upon the pelvis, adducted and rotated inwards, the great toe resting against the ball of the toe of the opposite side; it was shortened one inch; on elevating and adducting, the head of the bone could be felt on the ischiatic notch, the patient being very thin. The trochanter major of the right side was three-fourths of an inch nearer the anterior superior spinous process of the ilium than the left, and the lumbar portion of the spinal column presented the arched form described by Mr. Syme as characteristic of dislocation into the ischiatic notch. This symptom, he says, is never absent—always well marked—and not met with in any other injury of the hip joint, whether dislocation, fracture or bruise, and cannot be made to disappear so long as the thigh is straight or in a line with the patient's trunk. On either side of the spine, on a level with the crista illia, the parts were bruised, showing where the bucket had struck. The patient was pale, with an anxious expression and feeble pulse, which excited a suspicion that some other more serious injury had been received. The pelvis and spine were carefully examined by myself, the

house surgeons, Drs. Gleason and Blasdale, and Drs. Burge, Brady and Samuel Hart, who were present, but no fracture could be detected.

I directed free stimulation and the hot air bath for the purpose of improving his general condition before attempting reduction, and saw him three hours subsequently. He had now reacted somewhat, and, in the presence of the gentlemen before named, I proceeded to reduce the dislocation by manipulation. The patient was so fully relaxed that an anæsthetic was not used. The first two efforts failed, leaving the head of the bone in the ischiatic notch; the third time, the limb being more abducted than before, the head was thrown on to the foramen ovale, and the limb presented the signs characteristic of that dislocation. By reversing the movements, it was easily replaced on the ischiatic notch. It moved backwards and forwards between these two points seven or eight times, with the greatest facility. The manipulations were made with care and deliberation; flexion, adduction and abduction being varied to every possible degree, with very little pain to the patient. During these efforts at reduction the pelvis was frequently examined, from a suspicion that it might have been fractured by the blow which produced the dislocation. I now had him etherized, for the purpose of applying extension with the pulleys; but, in the meantime, having made the manipulations upon the skeleton, I came to the conclusion that when the head of the bone was brought opposite to the lower portion of the acetabulum it might be lifted over the margin into the socket. This expedient was adopted by lifting at the knee with my hands, and the reduction was thus at once accomplished. The same plan, I have since learned, was adopted by Prof. Hamilton in the case of John Caswell.*

On the following day, no urine having been passed since his admission, a catheter was introduced and a small quantity of bloody urine drawn off. This symptom and the continued prostration, induced me to believe that the bladder had been ruptured when the injury was received. He died on the fourth day after the accident.

POST MORTEM.

Present—Prof. F. H. Hamilton, Drs. Minor, Enos, Hart and others.

* Hamilton on Dislocations and Fractures, p. 637.

Dissection of the joint.—On raising the gluteus maximus, a considerable quantity of extravasated blood was found beneath it; that portion of the muscle situated over the tuber ischii was ruptured, so as to make a depression large enough to imbed the tuberosity. Gluteus medius and minimus uninjured; lower edge of the pyriformis, the gemelli and the upper portion of the obturator externus lacerated; the capsular ligament lacerated through its posterior portion to one-half of its extent; round ligament torn from the depression on the head of the bone. The head was in its normal position in the acetabulum. On flexing the leg, which required considerable force owing to its rigidity, a fracture was revealed, by a loud crack, which was found to extend from the upper portion of the ischiatic notch through the acetabulum. There was no displacement, and I believe the fracture was incomplete, but was made complete by the force which was used to bend the thigh. The *bladder* was ruptured at the fundus; no urine detected in the peritoneal cavity; death caused by peritonitis.

Remarks.—The above case is the only one that has come to my knowledge where an opportunity has occurred of dissecting the hip joint in a recent dislocation backwards *when the head of the bone had been restored to the acetabulum before death.* The pathological condition of the joint in this case corresponds with what has been observed in the few recorded cases where dissections have been made after this accident. But it would seem probable that the injury to the soft parts here must have been increased by carrying the head of the bone repeatedly backwards and forwards between the ischiatic notch and foramen ovale.

If the pulleys had been applied, as was my intention when I directed the patient to be etherized, the fractured pelvic bones would have been torn asunder, and death must have resulted from this cause even if the bladder had not been ruptured. For this reason, therefore, the above case forcibly illustrates the value of Reid's method of reducing dislocations of the femur, to say nothing of its availability and comparative simplicity.

Article 22. Oblique Fracture of the Femur, caused by Spasms. By CHARLES BARROWS, M. D., Clinton, Oneida county, N. Y.

C. W., on the 17th day of January, 1861, while walking some four rods from the house, was violently attacked with spasms in the left leg and thigh; increasing to that degree that he was unable to sustain himself in an erect posture, and in this condition, gently kneeling, he finally laid down upon the ground on the right side, feeling at the same time that some portion of the limb had given way.

The spasms partially subsided. In this condition he was found (in a few minutes,) and conveyed to the house by two of his neighbors. Dr. T. was soon sent for, examined the limb and stated to the family that it was mere spasms, and he would soon be about again. Not being able to move the limb, two days after, Dr. B. was called in, and after an examination, directed a liniment to be rubbed on the limb occasionally, and encouraged the father of the young man, that his son would be about in a few days.

On the eighth day, Dr. B. was called in again, and finding the limb somewhat swelled, he bandaged it and directed spirits and water to be applied to the limb. As it is very natural for physicians, he encouraged them still more, that in a few days Chauncey would be able to walk about the house. By this time the limb commenced paining him severely.

I was called to visit the lad on the tenth day after the accident, and found him lying on his back, inclining to the left side, with the limb shortened; the toes turned directly outwards. The muscles of the thigh contracted, from an oblique fracture of the femur, just below the trochanter major; which I reduced, applied the splints and bandages; the patient recovered in a few weeks, without any more pain than is usually attended by fractures.

I mention this case as being a singular one to me, caused by spasms.

Article 23. Polypus Uteri and its Treatment. By WILLIAM GILFILLAN, M. D., Surgeon to the Long Island College Hospital.

[Communicated by the Medical Society of the County of Kings.]

In presenting the following case of Polypus Uteri to the notice of this society with the view of causing discussion on the subject, I will first briefly relate the circumstances of the case.

On the 7th May, 1860, I was requested to see the patient on account of severe flowing. On my arrival at the house I found the patient had fainted from loss of blood, and was then slowly reviving. I ascertained the following particulars:

The patient, Margaret S——, 23 years of age and unmarried, of dark florid complexion and spare build. From infancy she had enjoyed good health until November, 1859. At that time, being on a visit some distance from home, she got wet feet, and dates the origin of her complaint to that exposure.

Previously, her menses were rather copious, but free from pain. Since November, she had a constant dragging pain in the right side, and occasionally severe menorrhagia; menstruation began three days ago and was profuse from the first, and steadily increased, and weakened her so much that after the first day she kept her bed.

I now found her with cool clammy skin, countenance completely blanched, pulse 100 per minute and feeble, tongue moderately clean, bowels not moved since the flow began; the flowing still continued and of a bright red color, but smaller in amount—the napkins and bed linen were completely saturated.

On manipulation over the abdomen, the uterus could be felt distinctly above the pubes, enlarged; vaginal examination was objected to; the uterine enlargement having raised suspicions in my mind, especially, accompanied with so much hemorrhage, I questioned the patient and her friends closely, but I could elicit nothing material or suspicious. I gave directions to raise the pelvis and apply cold water and vinegar to the vulva and hypogastrium; I ordered a large opiate at once, and ten grains of

gallic acid every three hours, and icewater acidulated with aromatic sulphuric acid as a drink, "ad libitum."

Next day, May 8th, she felt a little better, but very weak; slight flowing still, uterine enlargement as before—continue treatment.

May 9. Very little flowing, pulse 90, rather weak, tongue rather furred, and bowels not moved for five days. I ordered some rhubarb and jalap to move the bowels, and the gallic acid to be given in ten grain doses three times a day.

May 10. The purgative acted freely, the flow increased for a time afterwards, but there is very little, scarcely any, to-day; tongue moist and moderately clean; omit the gallic acid; prescribed four grains of sulphate of quinine three times a day.

May 12. Appetite improving, pulse 80; there is now a pretty free watery discharge from the vagina, occasionally tinged with blood. On the 14th of May, she sat up for a short time, and from that date improved very rapidly. She thought herself quite restored to health, and was married on the 2d of July, 1860.

In September she called on me complaining of menorrhagia, for which I prescribed gallic acid.

November 10, I was again called to her. Since her marriage she had been residing in New York; last month she had an attack similar to the one she had in May; she suffered more pain, but did not lose nearly as much blood; her physician called it "inflammation of the womb." She had now constant pain in the back and a dragging pain in the right side and hypogastrium; great leucorrhœa in the intervals of menstruation; the latter came on twice a month and only left about five day's interval; her countenance was now sallow and haggard, and indicative of great and prolonged suffering, and her strength was rapidly giving way from such a constant drain upon her system.

On manipulation over the abdomen, the uterus could be felt somewhat enlarged. I now made a vaginal examination and felt with my finger a smooth soft body projecting through the os uteri, nearly a quarter of an inch; it was not sensitive to touch, and I could partly introduce the point of my index finger in the os, but I could feel no attachment or pedicle after passing my finger completely around it. With the speculum, I could see a dark purplish mass projecting through the os.

Having no doubt in my mind that I had now to deal with a

polypus uteri, I told the patient that it required an operation for its removal, and advised her to have it done as soon as possible. She readily consented to anything that would cure her; she had ceased menstruating the day previous, and I thought that in two or three weeks the polypus might descend lower and permit its removal with greater facility.

November 20. I again made an examination; there was great leucorrhœa; I felt the os uteri dilated the size of a quarter, and the polypus not protruding in the least. I was disappointed and somewhat surprised at this state of affairs, as I had anticipated that the polypus would have protruded still further. I now prescribed 15 grains of powdered ergot three times a day, hoping to arouse uterine contractions, and so force the polypus through the os uteri.

Nov. 22. Dr. E. N. Chapman visited the patient with me; she had now taken a drachm of powdered ergot; she felt giddy, suffered from noise and uneasy sensations in the head, and had slight nausea; her countenance was very pale and her pulse 60. Perceiving that we had now developed the narcotic effects of ergot, its use was suspended; there was no change in the uterus; the finger passed freely around the polypus, but no pedicle could be felt.

On the 24th she began to take 20 drops of the fluid extract of ergot, three times a day. This preparation was chosen because the narcotic properties are contained in the oil of ergot, and by giving the *watery* extract we obtain its effects on the muscular structure of the uterus without any narcotism.

Nov. 28. Dr. Chapman saw her again with me; there was a slight discharge of blood; she felt pain in the womb soon after taking each dose of the medicine.

On examination, we found the polypus protruding nearly half an inch beyond the os; its surface was smooth and vascular and of a purplish hue. By placing one hand over the abdomen and forcing down the body of the uterus, we could pass the fore-finger of the other hand through the os and trace the polypus until we could feel it springing from the fundus uteri. The pedicle was so short we could not correctly estimate its thickness; the polypus seemed to be the size of an orange; the uterine sound passed freely around it, and the pedicle was felt at the top.

Owing to the shortness of the pedicle and its attachment to the fundus, it was impossible for any uterine contractions to ex-

pel the polypus without producing at the same time inversion of the uterus; it was therefore determined to remove it as soon as possible. The patient was ordered to continue the ergot and have the bowels moved by castor oil. From the situation of the pedicle and the closeness with which the uterus was expanded around the tumor, I determined to attempt its removal by torsion, as it would be a matter of extreme difficulty to apply a ligature.

Accordingly, Nov. 30, assisted by Drs. Dudley and Chapman, I proceeded to operate. To guard against subsequent hemorrhage, I gave 30 drops of extract of ergot, to ensure firm uterine contraction. On examination, the os uteri was nearly the size of a half dollar, the polypus pressing closely against it. I used a pair of long, slender, fenestrated forceps; so closely did the uterus envelope the growth that I could only introduce one finger with the forceps through the os for fear of lacerating it.

Perhaps the contractions caused by the ergot increased this difficulty. With the left middle finger as a guide I introduced the forceps. Some difficulty was encountered in getting a proper grasp of the polypus arising from the difference in the axes of the cavities of the vagina and uterus. The polypus was firmly grasped and the handles tied together to prevent slipping.

I now gently twisted the growth on its axis three or four times and on using a little traction the polypus came away. It came off level with the uterine walls, a fact ascertained by Dr. Chapman and myself. There was no hemorrhage. No anæsthetic was given and the patient said she felt very little pain, and was surprised when told it was over. I gave her gr. $\frac{1}{8}$ of sulphate morphia immediately.

The polypus was the size of a pullet's egg, firm and fibrous. The mucous membrane covering it was of a dark livid color but not ulcerated anywhere. The pedicle was in circumference equal exactly to a three cent piece. (Figure 5.)

I saw the patient three hours after the operation, she was then very cheerful and free from pain, pulse 84. On the napkin there was one very small spot of blood.

Next day she said she had not been so free from pain for many months and she felt quite delighted. There was no vaginal discharge. She remained, by my orders, in bed for two days. After the fourth day she moved around the house at pleasure and she very rapidly regained flesh and strength.



I saw her on the 20th January, 1861. She was then a perfect picture of health, her cheeks quite rosy.

In the interval she had menstruated once. It lasted three days, was small in amount and free from pain.

In beginning of May I saw this patient accidentally. She remained perfectly well and felt no inconvenience, and was remarkably healthy in appearance.

A few weeks ago I had an opportunity of seeing her. She remains free from any inconvenience, and I may state that she has never been pregnant.

I would here remark that by a simple and painless operation this patient was relieved of very great suffering and freed from a hemorrhage which was undermining her constitution rapidly and might at any time prove fatal, that the system suffered very little, or none at all, from the operative procedure and that the relief *was immediate*, and as we believe, permanent.

The diagnosis of polypus is often attended with difficulties, more especially is this the case under two different circumstances. In one case there is great difficulty when the polypus is intra uterine and the os and cervix uteri are unexpanded. In the other case we have difficulty when the polypus is large and grows from a lip of the os, its bulk distending the vagina and completely concealing the os uteri except after the most laborious and minute search. (See figure I.)*

In the latter case it may be confounded with *inversio uteri*, and to correctly distinguish it from this condition we must find the os uteri by careful and repeated examinations. The uterine sound in such cases must be our main reliance. If we can pass the sound through the os into the cavity of the uterus our doubts are solved. To do this, however, is infinitely more simple on paper than it is in practice.

When the polypus is intra uterine with the os undilated a *certain* diagnosis can scarcely be arrived at until by the use of sponge tents, or other means the os is expanded, when there is generally little difficulty. The uterine cavity can then be explored by the finger, assisted by the sound, and an absolutely

*The drawings 1, 2, 3 and 4, are taken from preparations in the museum of the Long Island College hospital. By the kindness of the council of the college I was permitted to exhibit these interesting and valuable preparations to the Kings County Medical Society, to illustrate my meaning and the relation of fibroid growths to polypus uteri. The drawings 1, 2, 3 and 4 are taken respectively from Nos. 621, 666, 661 and 662. See catalogue.

positive diagnosis made, But when the os is expanded and the polypus of moderate size there is usually no doubt in making our diagnosis at once. In the case which I present to the Society there was no difficulty in diagnosis, a simple digital examination established the fact of a polypus, but the speculum and sound gave us additional information on minor points.

The diagnosis of polypus being once established I think *we should almost invariably remove it as soon as practicable.*

A patient with polypus uteri is at any time liable to hemorrhage, which may prove fatal.

The danger from this source is as great and as imminent from a small as from a large polypus, perhaps even more so. Prof. Simpson in his "Obstetrical Memoirs," reports the case of a lady unmarried aged 55, as follows: "She had been long suffering under severe menorrhagia. The face was pale and anemic, and her health and strength broken down. On examination per vaginum, the os uteri was found closed, and Dr. Wood believing with me that the hemorrhagic drain might be the result of an intra-uterine polypus, the mechanical dilatation of the uterine cavity was advised but given up in consequence of local treatment being objected to. In a few weeks she sank from continued hemorrhage. On opening the body Dr. Wood and I found the lower part of the cavity of the uterus distended by a polypus of the size of a small plum, and attached to the back wall of the uterus by a narrow half broken stalk." On this Dr. Simpson remarks: "It was evident that if the cavity of the os and cervix uteri could have been artificially dilated during life the polypus would have come within reach and the patient's life been saved."

In addition to the risk of death directly from hemorrhage there are more instances where the patient, weakened and enfeebled by this steady drain on the system, succumbs rapidly to acute diseases as pneumonia or dysentery which otherwise would not have proved fatal, or they fall victims to tubercular disease induced by their enfeebled state.

Polypus, in most instances, prevents conception, but, occasionally, if the polypus be small pregnancy occurs. In such cases the risk of the patient is considerable. They may die of hemorrhage in the early months if the polypus grows from the cervix.

Figure 2 illustrates an occurrence of this kind. There is a polypus growing from the upper part of the cervix, which is just presenting at the os. Pregnancy had occurred and gestation pro-



gressed to near the end of the third month, when death took place from uncontrollable hemorrhage. I may remark that this polypus is not large; and moreover, that such persistent and violent hemorrhage as caused death, did not cause the uterus to expel the ovum. If this polypus had been recognized before pregnancy, it could have been removed with absolute safety.

If a polypus is situated at the fundus it may cause miscarriage, or after parturition they may so interfere with uterine contraction as to cause death by hemorrhage. Churchill cites a case which occurred in his own practice, where death resulted from postpartum hemorrhage; and on dissection, a large cellular polypus was discovered at the fundus uteri.

A polypus may also seriously impede labor by its bulk in the vagina, or by its interfering with the expansion of the os, and occasionally require instant removal before the labor will proceed.

Occasionally, but very rarely, polypi fall off spontaneously. Dupuytren relates one such case, where at one examination a small polypus was discovered, and he determined to remove it. Four days afterwards the polypus had gone. The previous evening, the woman had passed from the vagina a small black elongated body which she took to be a coagulum. Dupuytren thought that the vitality of the growth had been affected by the examination. From his description, it seems to have been of the cellular variety.

An intra-uterine polypus may partly protrude through the os, and, at a subsequent period, completely withdraw into the uterine cavity. In the case I have read, the polypus projected on the 10th November a quarter of an inch through the os, and on the 20th November it had receded completely, but the os was still dilated.

Dr. Simpson (*Obstetric Memoirs*,) relates a case where Dr. Beilby made an examination, "found a polypus of the size of an almond projecting from the lips of the os uteri. On Dr. Beilby returning two or three days subsequently to put a ligature around the neck of the polypus, none could be found, and the os uteri was shut. The other symptoms, however, did not change, and on the recurrence of a new hemorrhage, Dr. Beilby made another examination, again found the polypus protruding, ligatured and removed it."

If a polypus remain long without being removed, the mucous membrane covering it is apt to ulcerate and it may become ad-

herent to the walls, or cervix, of the uterus; very much embarrassing the operator who attempts to remove it, and certainly adding greatly to the risks of the unfortunate patient.

Mr. Baker Brown, of London, (*Surgical Diseases of Women*), relates a case where the polypus was the size of a small apple. On proceeding to apply a ligature for its removal, he found it adhered very firmly to the os and cervix. "He dissected the os and cervix carefully back, separating their very firm adhesions which extended upwards of two inches. He then found the bands of adhesion becoming fewer and easily broken down by the fingers. The polypus could now be distinctly felt growing from the fundus of the uterus." It was then ligated. She died five weeks after the operation, from softening tubercle on the lungs.

When such adhesions exist, I think there is great danger of metritis and pyemia.

REMOVAL OF POLYPI.

The removal of a polypus may be accomplished by one of three ways: 1st, by torsion; 2d, by excision; and 3d, by ligature. I have mentioned these three methods in what I consider is their order of merit. To the last two there are some serious drawbacks; to the first there are none, but it is not applicable to all cases.

Torsion affords the quickest and easiest method when it is applicable; but, unfortunately, many polypi grow with such a broad base—especially those from the cervix, which often involve one entire lip—that torsion will not remove them. By torsion, carefully used, we can remove all mucous and cellular polypi; and *all fibrous polypi that have a narrow pedicle*, especially if it be short. There is no chance of hemorrhage, for the individual vessels which enter a polypus are small, though in the aggregate they may convey a good deal of blood; and by the twisting, these are completely sealed up. Mr. Toogood, of the Bridgewater Infirmary, first advocated this practice; and, in a suitable case, it possesses the advantage over the two other methods of being easily and quickly performed, safe, and at the same time certain in its results—"tuto cite et jucunde."

Second. Excision—for which a variety of instruments have been invented and used—is rapid in its performance and makes sure work of the polypus. Many object to it for fear of subse-

quent hemorrhage. Dupuytren excised over 200 polypi and had only a trifling hemorrhage in two cases. Prof. Simpson has lately used this mode exclusively, and I am not aware of any unpleasant hemorrhage resulting.

The ecraseur is a favorite instrument with some in removing these growths, to avoid hemorrhage; but we see that this accident is not likely to occur under any method of operating. There is a decided objection to cutting instruments when the pedicle grows from the fundus uteri, as it is very difficult to use them with safety to the uterine walls, if we wish to cut the pedicle close off; and if we leave a portion of the pedicle attached to the walls it will die, and may give rise to unpleasant symptoms from absorption of putrid matter. Of this danger I shall speak more fully under the next head.

We come lastly to the third method—the *ligature*, a means applicable to most cases yet with certain very grave objections attached to it. It is the oldest of all the methods and was invented when the pathology of polypi was very crude and vague in comparison with what it now is. It was used by the older accoucheurs and surgeons who were more cautious in their proceedings than their successors, and in some cases is still to be preferred to other methods.

When the pedicle is very large and seems unusually vascular, more especially if it involve the greater part of one lip of the os or cervix, the ligature is, I think, preferable.

But its disadvantages are considerable. It requires time to separate the polypus, varying according to the thickness and vitality of the tumor.

The fetor arising from the putrid mass in the vagina is very offensive and disagreeable to the patient, &c. There is, besides, danger of the absorption of this gangrenous ichor, and the system often exhibits febrile reaction to a considerable degree. Dr. Tyler Smith has observed that an eruption of boils often takes place after the use of the ligature in such cases showing that some poisonous material has been absorbed. Some patients succumb to the febrile disturbance caused by the ligature superadded to their enfeebled state. Severe rigors are common. Besides as the ligature is generally applied by means of a canula the recumbent posture is necessarily required for many days.

To avoid the dangers of putrid absorption Mr. B. Brown cuts off the polypus anterior to the ligature, leaving only a piece of

strangulated tissue in the vagina, or womb, instead of the whole polypus.

Another method proposed is to twist the pedicle on its axis and so cut off the circulation through the polypus and leave it to slough. But it would be better to twist it off at once and leave no dead tissue in the vagina.

The danger of bleeding is a bugbear, more than a reality. Even when cut off smoothly it is very rare for any to occur, and I know of no fatal case of hemorrhage from excision of a polypus.

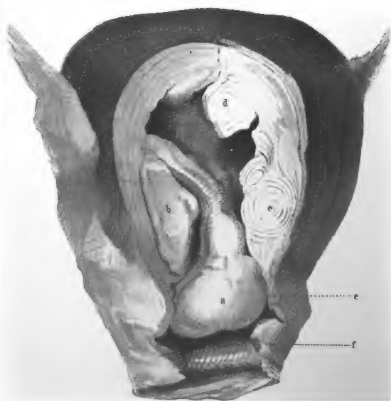
When the polypus has been removed the question arises is the patient cured. This may be easily answered in the affirmative when the polypus is *mucous* or *cellular*. If it be fibrous the answer is not so simple.

That the patient is cured of the polypus that has been taken away is certain, but another may at a subsequent period grow.

The development of fibroid growths in the uterine walls may result in a fibrous tumor or in a polypus, according to circumstances, influencing its growth in particular directions or shapes.

When one of these growths exists, on dissection we generally find the germs of several others, and they may undergo successive development. If one be removed by operation its place may be taken by another as it were. Figures 3 and 4 illustrate this condition of the uterus and may serve to make my meaning clearer. Thus in figure 3 we have a large fibrous polypus; if it were removed room would be given for the expansion of the fibroid germs seen at *b*, *c*, *d*, and *b* might soon develop into a similar polypus, and this in succession might be succeeded by the germ *c* and *d*.

Again in figure 4 we have a large fibrous polypus which has passed into the vagina. At the fundus uteri are seen the fibrous tumors *a* and *b* which are only connected with the uterus by a little fibrous tissue and the peritoneum. At *c* is a fibroid germ which if developed towards the mucous surface would become a polypus, while if it grew towards the serous membrane it would become comparatively harmless as a small fibrous tumor, as has already taken place in the same specimen at *a* and *b*, and in figure I at *c*. Yet, I think, in the case of uterine polypi, where one is fully removed, it is seldom another requires subsequent removal. But if we do meet with a second polypus we are certain it grows from a different root or germ.



There are many interesting points in connection with polypus upon which I have not touched, especially the source of hemorrhage and other interesting questions in their pathology. My object has been to excite discussion on its practical bearings, and to direct attention to the *facility with which many of these growths can be removed by torsion*.

In conclusion, 1st. I would urge their early removal in all cases except when contraindicated by coexisting pregnancy. 2d. When they are intra-uterine and the os not dilated, it should be dilated by sponge tents or other means, and the polypus removed, for if we trust to natural efforts to open the os uteri sufficiently to permit its removal the patient may succumb to repeated hemorrhage, of which there are numerous recorded instances. 3d. When in any case we meet repeated uterine hemorrhages not plainly referable to some well ascertained source, we should dilate the os and cervix uteri so as to permit a thorough search for an intra-uterine polypus.

[By the kindness of the Kings County Medical Society, I am permitted to add a compendious report of a case of intra-uterine polypus, which I have treated since this paper was read before that society. I have condensed the report as much as possible, so that I may not trespass too much upon your time.]

September 27, 1861. I was called to Mrs. O——, at 44 , and found her suffering from a very severe bilious attack, with vomiting and purging, and cramps. In a few days she regained her usual health, which was but indifferent, as she suffered severely from menorrhagia. She was a tall woman, of rather stout build, somewhat fleshy, but very sallow and flabby. For the last year she had been subject to frequent "*bilious attacks*," accompanied with considerable flowing, and each attack leaving her more prostrate and reduced.

On the 11th of October, she had an attack of pleurisy on the left side, attended with great pain and prostration. This yielded in a few days to small doses of tartarized antimony and morphia, aided by a blister over the seat of pain. The uterine flow was very severe during this period, and I obtained the patient's consent to a vaginal examination and whatever subsequent treatment was required.

On enquiry, I found that she had begun to menstruate when 17 years old. During the two first years it was attended with

pain, but not subsequently. She had been married 15 years, and has had five children and one miscarriage.

One year ago, after a very long walk on a warm day, she had very great flowing, which confined her to her bed for a week. After that, her monthly turns were very profuse and attended with great pain in the right hypochondriac region.

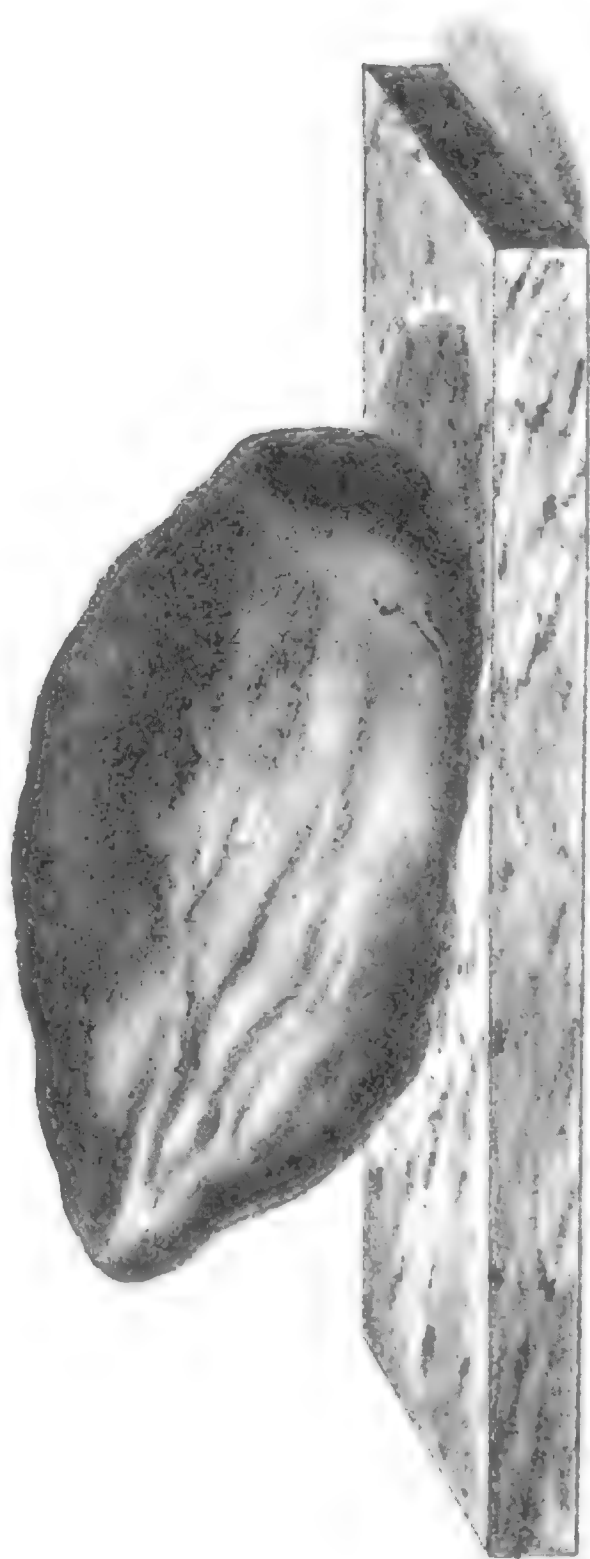
Since July, 1861, there has been flowing, more or less every day, and at the time corresponding to menstrual periods it has been excessive and weakened her much.

Her appetite was failing, and she had palpitation of the heart, but no detectable cardiac bruit.

October 21, 1861. On vaginal examination I found the uterus completely retroverted, the os looking forward to the pubes and the fundus pressing against the rectum, and very distinctly felt per anum. The os uteri was slightly patulous, the posterior lip thickened and hard but smooth. The very tip of the forefinger could be pressed into the yielding os. The uterine sound passed up in a backward direction, only $2\frac{1}{2}$ inches from the os. The os would not engage the speculum.

I suspected polypus uteri from the symptoms, before making an examination, but this examination revealed no positive signs of polypus. Retroversion of the uterus might account for many of the symptoms, the hemorrhage excepted, but what was the cause of the retroversion? Moreover, I believe no amount of retroversion is sufficient to cause such large and continuous hemorrhage.

I still believed there was an intra-uterine polypus of small size which was the cause both of the hemorrhage and retroversion, and I intended to dilate the os and cervix uteri with sponge tents and explore the uterine cavity thoroughly. I requested Dr. Dudley's opinion, and he kindly examined the patient with me, October 25th. The os had dilated a little, and was dilatable. The forefinger, after a little manipulation, could be passed up the canal of the cervix; at the extreme end was felt a smooth roundish body pressing downwards. It was somewhat movable. Its attachment could not be felt, but was thought to come from the fundus. The uterine sound afforded no assistance. It was deemed advisable to dilate the cervix with sponge tents. This was accordingly done. The result of various examinations satisfied me that the polypus was soft, grew from the fundus, was about the size of half of an English walnut, had a broad base,



and was somewhat cone shaped. From its apex a soft vascular fringe grew, which came away at one examination.

October 31. The os was fully dilated and I determined to remove the polypus by torsion.

With the assistance of Drs. Chapman, Dudley and Hallet, I proceeded to remove it.

I first drew down the uterus quite low and steadied it with a sharp hook in the cervix, held firmly by Dr. Hallett. With a long pair of forceps, having a spoon-shaped fenestrated bill, I grasped the polypus, twisted and removed a portion of it. It was so soft it tore easily, and I removed it piecemeal. Some time was taken to insure its entire removal, and leave no shreds behind which might grow again. This was finally accomplished, as ascertained carefully by the gentlemen present. The removed pieces were very soft, composed of cellular tissue, except one small piece which was firm and fibrous.

Very little blood was lost; not more than an ounce. No anæsthetic was used, as the patient objected to it. She did not suffer much pain. I gave gr. $\frac{1}{4}$ of sulph. morphia. immediately afterwards.

Next day, November 1. Slept well last night and feels quite comfortable to-day. Some pain in lower part of abdomen.

November 2. Had a chill last night which lasted for three hours and was followed by copious perspiration. Tongue is clean, skin cool, pulse 80, no pain of abdomen, no hemorrhage, no discharge of any kind.

November 3. A slight greenish discharge from the vagina and a rather offensive odor; ordered to use a warm water vaginal injection. A vegetable tonic, with gr. ii of sulph. quinne, was ordered to be taken three times a day.

From this date she sat up and suffered no inconvenience. The vaginal discharge continued four days and then ceased. She gained flesh and strength rapidly. She has had no return of bilious attacks. Although somewhat advanced in life she menstruates regularly, but it is now quite small in amount and causes no suffering.

This case illustrates several points brought forward in the preceding pages. It shows

1st. That long and repeated hemorrhages may be produced by a small polypus.

2d. That so called menorrhagia is dependent in many cases on a small polypus.

3d. That when repeated hemorrhages occur we should, if the os uteri remains closed, dilate it thoroughly with sponge tents, so as to examine the uterine cavity.

4th. That torsion is best adapted for small polypi, especially when intra-uterine, as it removes them at once.

Article 24. Laceration of the Perineum with destruction of the Recto-Vaginal Septum. Operation—Result. By CHARLES C. F. GAY, M. D., Buffalo, N. Y.

Mrs. P——, aged 31 years, of infirm health, had her perineum lacerated at the time of her first confinement, eight years since, again ruptured in a subsequent labor five years since, and again two and a half years since, the laceration extending through the sphincter and recto-vaginal septum. The head of the last child was unusually large; since her last confinement there has been an inability to control the contents of the bowels, consequently frequent and copious fluid dejections which have imposed upon her a necessity for medical treatment, which has been persevered in for many months with only partial relief.

November 4. Mrs. P. returned from the country having been under the medical treatment of Dr. R. Williams, of Genesee co., —a most able and intelligent physician—who had attended her in one of her labors. She now returned to the city for the purpose of having an operation performed for radical cure—occurrence of catamenia to-day.

15th. Preparatory to the operation, ordered oil ricini one ounce, which moved the bowels twice; the next morning had three dejections and took morphia half grain.

16. Proceeded to perform the operation, assisted by Drs. White, Williams, Loomis, Eastman and Brown. Chloroform was administered. Having placed the patient on the table in the position for lithotomy, I denuded the bowel portion, using sharp-pointed scissors, to the extent of five-eighths of an inch on either side, the fissure running up to a point three-fourths of an inch above its terminus without wounding the mucous membrane of the bowel; then, with the knife, denuded a sufficient amount in length of the labie on either side, to the depth of nearly an inch, freely removing an abundance of tissue, afterwards dividing the sphincter by two incisions.

This done, the surfaces of the bowel portion were approxima-

ted by two silver sutures, small wire, twisted loosely, leaving them an inch and a half long and turned up in the axis of the vagina.

The surfaces of the perineal portion were next brought together by three silver sutures large wire, twisted loosely, and left several inches long. On passing one finger into the rectum and another into the vagina, the septum was found to be completely closed.

The operation lasted one hour and a quarter. Patient was now placed in bed, water dressings applied, and morphia one grain given; ordered opium, grains two, every four hours, with nourishment of a concentrated character; in five hours the gum-elastic catheter was used and retained in situ.

17th. Did not sleep much, labia dry and hot, somewhat painful, vomited once, pulse 80 per minute; continue opium every four hours with quinine sulph., grains 2, *ter die*.

18th. Obtained some rest, pulse 80 per minute, bowels quiet, considerable flatus, bladder irritable; urine has been drawn off every four or five hours.

19th. Comfortable; catheter removed, some purulent discharge from vaginam, inject tepid water at 12½ o'clock, had a convulsion, another at 3¼ P. M., lasting for a moment; had three or four prior to the operation; continue treatment and also the use of the catheter.

20th. Examined the perineum by placing the patient upon her side; wound looks well as if uniting.

21st. Discharge of blood from vagina, supposed to be the menstrual flow.

23d. Considerable pain in perineum, wound looking well, discharge from vagina ceased; removed the middle perineal sutures.

24th. Introduced rectal tube and kept it in situ for the purpose of allowing the escape of flatus, and to prevent it passing through the edges of the wound, which would tend to prevent union if allowed.

25th. Removed the remaining two perineal sutures, bladder very irritable and painful; remove the catheter whenever used.

26th. Had a copious fluid dejection from the bowels which passed out through the rectum without doing any injury to the parts.

27th. Had another dejection from bowels; introduced finger into the vagina and find union has taken place; the anterior portion

of perineum seems firm and united ; rectal tube daily removed, cleaned and replaced.

Dec. 3d. Wound is healing kindly ; bowels have been quiet.

4th. Union complete except a small fistulous opening half an inch from the anus, about the size of a small goose quill ; apply argt. nit.

5th. Took this morning an injection of warm water.

6th. Had two evacuations of bowels yesterday.

7th. Removed one of the internal sutures, using for this purpose the vaginal speculum.

12th. Setting up ; fistulous opening nearly closed.

16th. Removed the remaining suture, discontinue opium, and take morphia, grain half, night and morning.

28th. Rode out to-day ; has complete control over the sphincter, and has a strong perineum of normal breadth and thickness.

It may be observed that in this operation, the quill sutures, recommended by Dr. Baker Brown, were not used ; indeed they appear to me of no value whatever.

The operation was performed in the manner recommended by Dr. Marion Sims, with the exception that Dr. S. does not consider it at all essential to the success of the operation to divide the sphincter, and I believe also he immediately makes use of the rectal tube.

The success of this case seemed to me mainly to depend upon the two sutures which held together the bowel portion.

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Article 25. Case of Triplets. Reported by GUIDO FURMAN,
M. D., of New York City.

(Communicated by Medical Society of New York.)

Mrs. J. C., born in New York, aged 29 years, was married in June, 1854, at the age of 21, and has been married now going on eight years. During that period she has passed through five pregnancies.

Her first confinement took place June, 1855, one year after marriage, and was safely delivered of a living female infant.

Her next confinement took place August, 1856, fourteen months from the time of her first delivery, and gave birth to a living male infant. Immediately after this delivery she was attacked with a severe deep seated pain in the left iliac region which increased from day to day. With this intense pain there was some swelling, and as it advanced rigors and irritative fever. No decided diagnosis was made at the onset of this pain, she being attended by two highly respectable practitioners of medicine in this city, both well known to me.

After suffering for one week her case was pronounced as one of pelvic abscess of the left side. The treatment adopted was counter irritation, by means of: 1st. Mustard; 2d. Turpentine; and 3d. Blisters. The blistering was followed up by frequent warm cataplasms.

The medical treatment consisted in the administration of opium suppositories and anodynes per stomach. In five weeks from the period of commencement this abscess perforated the rectum and continued to discharge *pus* very freely for four days. The *pus* passed from her on a stool, and frequently filling half full an ordinary sized chamber. After the fourth day the quantity gradually diminished and the quality became altered, but several months elapsed before the discharge ceased altogether.

During the period of this sickness she lost her two children, the eldest died two months after her last confinement, at the age of sixteen months, and in a trifle over a month more she lost the second, then three months and five days old. Here I may men-

tion that her catamenia, since her last confinement, continued regular, and continued so during the entire period of her third pregnancy. During this pregnancy she had a continued uneasy feeling in her left side where the abscess had been located. Of this pregnancy she was delivered in October, 1857, of a living female infant, fourteen months after her second confinement. At this time excessive uterine hemorrhage took place, so that her life was imperiled for some moments, otherwise she and her offspring did well.

In May, 1858, she was once more called upon to part with this her last and only child, aged then, seven months and nineteen days. Thus in the space of thirty-five months she gave birth to and buried all three.

All were nursed by the mother, and tubercular meningitis was the cause of death with all of them, and each one had "convulsions." The last one also suffered from a "cold abscess," situated on the neck. It lasted four months, but had healed before it died. Tubercular deposit I can find none in the family, but her father-in-law died of phthisic, from which he suffered for seventeen years. In November, 1858, she became again impregnated and I attended her in that confinement, which took place on the fourteenth day of August, 1859, when she was safely and speedily delivered of a female infant, which is now living and apparently in the enjoyment of health. Since her birth she has encountered no sickness save a mild attack of bronchitis. I may mention here that I fed the mother during the period of nursing of this child, on the phosphate of lime.

Her last, the fifth conception, took place some time last March, and was attended from the first with excruciating pain in the back and left side. This extreme pain continued up to the hour of her delivery, which took place on the 24th of December, 1861, otherwise she was well.

On the morning of the 24th of December, 1861, I was sent for to see her. On my arrival there I found her in bed, partly under the influence of chloroform, and in active labor.

On making a vaginal examination I found that the vertex presented and that the head had engaged the inferior strait. On laying my other hand on the abdomen I discovered another head resting in the left hypogastric space. The first indication of labor she had was on waking at six o'clock in the morning. She found the amniotic fluid escaping, and in about half an hour later

parturient pains came on. I saw her at eight o'clock, and at a quarter of nine she was delivered of a living female child. In about half an hour from this time she experienced very severe pains, and on making the second examination I found the feet of the second fœtus presenting. I ruptured the membranes and left the case to nature. Her pains continued to be good, and at ten minutes past eleven o'clock she was delivered of a fine living male infant.

I had scarcely separated this infant from her when her pains came "in" very fast, and at 11½ o'clock, she gave birth to the third one, another boy. Here I would remark, that not a particle of uterine hemorrhage occurred until the detachment of the placenta took place, which was shortly after the birth of the last child. The mother and children doing well, I left them at three o'clock in the afternoon, taking with me the placenta for preservation.

At seven in the evening, I saw my patient again; she was suffering much with afterpains. Her mother had given her already about one fluid drachm of the tincture of opium, in divided doses, without benefitting her. I ordered hot fomentations to the abdomen, and half a grain of the acetate of morphine every hour until the pains subsided. She took only two half grain doses and fell in a refreshing slumber, the children doing well. Next morning, December 25th, found the mother comfortable, but indications of returning pains; kept her slightly under the influence of the anodyne during the remainder of the day, and she continued comfortable. I find that the second child, the footling case, moans considerable, it refuses to swallow, and presents a very blue appearance, the lower extremities being very cold and almost black. I looked upon it with an unfavorable eye, ordered it to be bathed with some spirits three or four times during the day, to be wrapped up in cotton or wool, and be kept near a warm stove.

On the 26th, mother and children doing very well, and have been thriving finely ever since; the mother has not milk enough, but the milk of one cow makes up the deficiency.

Five hours after birth the children were weighed; the first two weighed each 7¼ pounds, and the third one weighed four pounds, making an aggregate of 18½ pounds.

The placenta, 32 hours after expulsion, and after macerating the same for 29 hours in water, weighed 3 lbs. 3½ ounces, is ellip-

tical in shape, divided into three lobes, but the whole forming one large vascular mass, somewhat thickened at the insertion of the chords, the average thickness being about $1\frac{1}{2}$ inch; measured 10x13 inches in diameter, and $37\frac{1}{2}$ inches in circumference; the coronary sinus was very distinct.

The chords were all of the usual thickness, and measured in length as follows: the chord belonging to the first born, was 36 inches long and inserted towards one of the outer edges of the placenta; the chord of the second born measured 21 inches in length and was inserted in a corresponding situation, opposite to the former; and the third, or last born, had the shortest one, measuring only 16 inches, but was the thickest of the three, and was inserted in the middle of the placenta; aggregate length of chords, 73 inches.

I saw the children this morning, now 13 days old, and they, with their mother, are doing well, and from present appearances, are likely to continue so.

The funis separated from the children as follows—the one of the first born separated on the eighth day after birth, and the two remaining ones separated on the thirteenth day after birth.

The above case was narrated by Dr. Thomas, before the New York county medical society, January 6th, 1862.

NOTE.—February 11, 1862, all three children are still living, and are likely to do well. All three have passed through a severe attack of follicular stomatitis, attacking the epithelium of the whole bursal cavity, and other parts of the prima vias.

NEW YORK, *February* 1, 1862.

Article 26. Summary of seven daily Observations of the Temperature, Moisture, Weight, Direction and Condition of the Atmosphere for the year 1861, kept at 57 Essex street, New York, by J. P. LOINES, M. D., Chairman of the Meteorological Committee of the New York County Medical Society.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Mean temperature, 6 A. M.	26	33	33½	46	53	67½	70½	69	65	55	39	30
Mean temperature, 2 P. M.	32	44	46	64	65	74	83	78	74	69	48½	40
Mean temperature, 10 P. M.	27	36	38	47	54	70	72	71	68	58	40	32½
Mean temperature of evaporation, 6 A. M.	24	30	31—	42	49	61	64	63	59	50	35½	27
Mean temperature of evaporation, 2 P. M.	28	38	39½	56	58	64	69	65	64	60	41	34
Mean temperature of evaporation, 10 P. M.	24½	33	35	43	50	64	54	64	62	53	36	29
Mean temperature for the month	28	37	40	51	57	71	74	73	69	59	43	34½
Minimum temperature in the month	—1	—10	8	33	36	50	53	55	52	34	28	14
Maximum temperature in the month	50	70	73	80	80	88	94	95	82	86	63	61
Mean temperature of evaporation	25½	32	36½	45	52	64	64	64	62	52	37	29
Least height of barometer in the month, Ins.	29.35	29.30	29.25	29.25	29.17	29.47	29.47	29.61	29.35	29.34	29.25	29.35
Greatest height of barometer in the month, Ins.	30.60	30.55	30.45	30.35	30.31	30.34	30.17	30.24	30.45	30.30	30.34	30.60
Mean height of barometer in the month, Ins.	30.00	29.94	29.84	29.93	29.82	29.86	29.90	29.95	30.00	29.74	29.81	30.02
Mean daily range of barometer in the month, Ins.	.30	.33	.36	.19	.24	.16	12	11	19	20	21	22
Mean daily amount of cloud (0 to 10)	5½	4½	5	3½	3½	4	3½	5	3	4.6	4	4
Number of days clear, or mostly so	14	13	15	19	20	18	20	16	20½	17	17	18
Number of days obscured	17	15	16	11	11	12	11	15	9½	14	13	13
Number of days easterly winds	10	8	9	11	9	10	15	16	10	12	10	6
Number of days westerly winds	21	20	22	19	22	20	16	15	20	19	20	25
Inches of rain and melted snow	3.3	3.4	5.0	5.21	5.70	5.91	2.84	5.13	2.91	3.64	6.00	1.75

The winter of 1860 and 1861 was somewhat warmer than usual, as the following table will show :

Mean Temperature.	Dec. Deg.	Jan. Deg.	Feb. Deg.	March. Deg.	Mean. Deg.
Winter of 1853 and 1854.....	33	30½	30	34½	32
1854 and 1855.....	29½	32	23	34	30
1855 and 1856.....	34	20	24	32	27½
1856 and 1857.....	32	20	36	33	30¼
1857 and 1858.....	39	42	26	36	38¼
1858 and 1859.....	34	30	35	46	36¼
1859 and 1860.....	30	32½	30	43	34
1860 and 1861.....	29	28	37	40	33½
Mean of eight years.....	32½	29½	30	37½	32

January was colder than the average; while February and March, as can be seen, were much warmer. The lowest temperature of the year was ten degrees below zero of Fah., on the 8th day of February.

This was the coldest day in seven years. It was preceded by a warm forenoon of the seventh. Temperature at noon 50, barometer 29.40; wind south-west; change at 2 o'clock, P. M., to northwest, with a tempest, with light rain and snow. By 9 P. M., the temperature was at zero, and in twelve hours the total fall of the mercury in the thermometer was 50 degrees; rise at the same time of barometer more than one inch. This weather, and the change, occurred on a large extent of country.

The temperature reached the high point of 70 degrees on the 28th of February, and 73 on the 3d of March. The winter had less snow than usual. The severest snow storm was on the 21st of March, when over 12 inches fell upon a level. It was succeeded, on the morning of the 22d, by the hardest gale of the season.

The latter part of April was much warmer than the average, the temperature being 80 on the 27th. There were also more fine days than usual. May had a large rain fall.

A remarkable storm, accompanied with hard wind, hail, thunder and lightning, occurred early on the morning of the 27th, lasting about three hours.

Vegetation, although backward, was not interrupted by frost. Hot weather commenced with June.

On the 11th, a flood and hail storm occurred at 1, 4½ and 5

P. M.; amount of water, $2\frac{1}{2}$ inches; weather sultry; barometer fell half an inch to 29.40.

*There was not quite as much thunder and lightning as usual during the summer, but more rain than usual fell in June.

The 3d of July was the driest day of the year: maxim. temp. 81; dew point 32; barometer 30 inch; wind N. W., fresh, clear.

Mean Temperature.	June. Deg.	July. Deg.	August. Deg.	Sept. Deg.	Mean. Deg.
Summer of 1854	71	79	$75\frac{1}{2}$	66	$72\frac{3}{4}$
1855	69	78	74	69	$72\frac{1}{2}$
1856	70	77	71	$68\frac{1}{2}$	$71\frac{1}{2}$
1857	66	75	72	64	$69\frac{1}{4}$
1858	72	74	72	67	$71\frac{1}{4}$
1859	68	73	72	62	$68\frac{3}{4}$
1860	71	75	$72\frac{1}{2}$	66	$71\frac{1}{2}$
1861	71	74	73	69	72
Mean of eight years	70	76	73	$66\frac{1}{2}$	71

The table above shows the mean temperature of the summer to have been about the average of eight years.

The highest temperature—in the shade 95—was on the 3d of August.

The heaviest rain storm of the year occurred on the 12th and 13th of August; amount nearly 4 inches. It commenced at 5, P. M., of the 12th, with wind N. E.; temperature 66; an interval at early evening; tempest with thunder and lightning late P. M., and again early A. M. of the 13th, followed by heavy rain nearly all day and night. Although the mercury in the barometer did not fall very low, the storm extended over a large extent of country. Accounts were given of eight inches of rain on a level in Cayuga county, New York.

A lunar rainbow occurred on the 28th of September. This was the finest month of the year, having only nine cloudy days.

October was more variable than usual, with hot and cold extremes. The first ice of the season formed in exposed situations on the morning of the 25th.

Three inches of rain fell during a N. E. storm on the afternoon and evening of the 3d of November.

On the morning of the 9th, during a N. E. rain storm, hard thunder and vivid lightning prevailed for half an hour. The amount of rain was greater in November than in any other

month of the year, and the smallest in December. The first snow storm of the season occurred on the 15th of November; one half inch fell before daylight. Very little snow, however, fell between that date and December 31.

The weather of December was remarkably good, and remarkable for a high range of barometer.

The concluding table shows the means for the year, &c. :

Mean temperature for the year 1861	53 deg.
Mean temperature of evaporation for the year.....	47 deg.
Mean height of barometer for the year.....	29.90 in.
No. of days clear, or mostly so, through the year....	207
No. of days obscured, through the year	158
No. of days of easterly winds through the year.....	125
No. of days of westerly winds through the year.....	240
Quantity of rain and melted snow through the year..	50 $\frac{3}{4}$ in.

Article 27. Abstract of Health Officer's Report, City of Brooklyn.

[Communicated by Dr. Mason, of Kings county.]

HEALTH DEPARTMENT, *February 5, 1862.*

TO THEODORE L. MASON, M. D.:

Dear Sir—In compliance with your request, I herewith transmit to you an abstract of my annual report of the mortality of the city of Brooklyn for the year 1861.

If you deem it of sufficient interest to lay the same before the State Medical Society be kind enough to do so.

It will certainly have the effect of correcting some erroneous statements made to and published by the State authorities last winter, in regard to the mortality of our city. [See reports of the committees on the incorporation of cities and villages, on the bills entitled "An act concerning the public health of the counties of New York, Kings," &c., 1860 and 1861.]

Returns of Deaths in each Month.

1861	Males.	Females.	Adults.	Children.	Total.
January	350	295	208	437	645
February	262	273	200	335	535
March	292	256	209	339	548
April	237	233	155	315	470
May	236	218	152	302	454
June	229	190	148	271	419
July	346	324	183	487	670
August	461	382	197	646	843
September	362	323	199	486	685
October	283	247	167	363	530
November	275	242	196	321	517
December	309	256	204	361	565
	3,642	3,239	2,218	4,663	6,881
	6,881		6,881		

It appears from the above, which is a correct copy of my records, that during the year 1861, six thousand eight hundred and eighty-one persons died in the city of Brooklyn. This includes deaths from all causes, which is thirty-two less than occurred in 1860 from *all causes*, and one hundred and seventy less than occurred from disease alone.

The general census returns for 1860 gave three thousand three hundred and forty-seven deaths for the city, showing a difference of three thousand five hundred and sixty-six between their report and mine!

It must be borne in mind that the census takers obtain their information concerning the number of inhabitants from the same sources and at the same time that they obtain their knowledge concerning the number of deaths, hence if we estimate the ratio of mortality to the population of the city, according to the census, we should use both of their returns in regard to the population and deaths, which would give us a ratio of one to about seventy-nine, but taking their returns for population and my record of certificates filed and the ratio would be one in forty nearly. The latter plan was adopted by the above mentioned committee when they reported to the Legislature that the city of Brooklyn was the next most unhealthy city in the world, New York being the most unhealthy. [See Assembly document No. 59 for 1860.]

If we estimate from an assumed population of three hundred thousand and from the records in this department of the number of deaths from disease the ratio would be about one death to every fifty persons, or about two per cent., and this I am inclined to believe to be as near the actual as we can arrive, which places Brooklyn among the healthiest cities in this country.

Two hundred and nine different causes are assigned as producing the above mortality, consumption, as usual, leading the van in numbers, seven hundred and fifty-eight having died of this disease; convulsions, (?) four hundred and eighty-two; scarlet fever, four hundred and sixty-three; cholera infantum, four hundred and thirty-six; still-born, four hundred and twenty-one; infantile marasmus, (?) three hundred and forty-one; inflammation of the lungs, three hundred and one; diphtheria, a disease reported for the first time in this city in 1859, when it contributed thirteen deaths; in 1860, one hundred and thirty-five; last year, one hundred and sixty-five; croup for the corresponding

years gave : two hundred and four, two hundred and thirty-six, and one hundred and seventy-three; scarlet fever, two hundred and ninety-four, five hundred and eighty-nine, and four hundred and sixty-three; bronchitis, seventy-three, seventy-seven, and seventy-nine; cynanche malignant, none, two, five; small pox was present in an epidemic form during May, June and July, and continued during the year, one hundred and twenty-four, and varioloid, eighteen deaths, being sixty-three more of the former and seventeen more of the latter than in the preceding year, most of the deaths occurring during the months above mentioned.

Respectfully submitted,

JOSEPH B. JONES, M. D.,

Health Officer.

Article 28. Case of Enlargement of Spleen. By LANSING BRIGGS, of Auburn.

[Communicated by Dr. ALDEN MARCH.]

Mr. John V. Smith, of the town of Scipio, Cayuga county, farmer, in the autumn of the year 1860, while pursuing his usual avocation, became sensible of an unusual and annoying shortness of breath (as he termed it) and weakness of his legs, especially at the knee joints, not to that extent however to interrupt his labor. These unpleasant symptoms increased on him during the following winter, and in March I first saw him professionally. I found him laboring under some difficulty of respiration, uninfluenced by position, a marked expression of anxiety of countenance, skin sallow, digestion somewhat impaired, with a general langour of the physical powers and depression of spirits. On examination of the abdomen, to which he called my attention, the eye detected at once a uniform enlargement of its left lateral half. This proved to be of decided firmness extending from the edges of the ribs downward to the crest of the ilium and into the inguinal region of that side, and from the linea alba posteriorly to the spine. Its anterior perpendicular margin was not at this time well defined, as also none of its other boundaries, owing to a general tension of the walls of the abdomen. I learned from the patient that some time in January preceding, he first discovered this induration in the left iliac or inguinal region; that the discovery was accidental, and that he was unable satisfactorily to account for its presence, having met with no accident or other adequate cause save a fall on his right side across the narrow edge of a manger in his stable early in the winter. I had been long and intimately acquainted with Mr. S.; he was 53 years of age, had lived most of that time in Onondaga and this county, was rather spare, of an active temperament, unexceptionable habits, intelligent and truthful, had never suffered from intermittents or other severe sickness. He had already consulted Dr. Phineas Hurd, of his town, who unhesita-

tingly pronounced it "enlarged spleen," maintaining that opinion with his usual sagacity, till the final event proved its accuracy.

The course I recommended—mercury internally, and tincture iodine externally—had no other effect than a temporary clearing up of the icteric hue of the skin and improving the digestion. The difficulty of respiration gradually increased, as also the general debility, till sometime in April when you (Dr. A. March, of Albany) saw him. Your opinion of him was embodied in a note I had the honor to receive from you by the hands of the patient on his return, and as it appears, you retained no written memoranda of the interview, I will transcribe it. You say, "I have examined the case of Mr. Smith, and have arrived at the conclusion that his abdominal enlargement is either an unusually rapid growth of the spleen, or some kind of visceral tumor, mesentery, or something else situated in the peritoneal cavity. If the enlargement commenced from above, I should be induced to regard it as an enlarged spleen."

From your underscoring, it is very evident that he stated to you—in which he uniformly persisted—that the "enlargement commenced below!"

At this time the boundaries of the tumor were much better defined. It could be satisfactorily traced from the lower margin of the ribs from under which it seemed to emerge downward into the iliac fossa; its anterior edge—it presenting that form, could be distinctly traced, and a fissure about midway of it, readily detected.

Your prognosis was decidedly unfavorable. On the 14th May, the last time I saw him previous to his death, which occurred the 25th of same month, I found him suffering intensely from an aggravation of all his heretofore unpleasant symptoms, with the addition of an unusual fullness and pain in the right side, indicating unerringly, an enlargement of the liver also.

The post-mortem examination revealed some emaciation of the upper extremities; quite a natural appearance of the lower ones; some yellowness of the skin; bowels distended, tympanitic; chest very full, resonant on percussion; right rather less so than the left; very little fluid in the cavity of abdomen; twelve ounces in the pericardium; spleen enlarged, extending from the fourth rib into the iliac fossa, 15 inches in length, $7\frac{1}{2}$ inches in width, the posterior margin $4\frac{1}{2}$ inches thick, terminating anteriorly in a thin edge, the whole of a deep bright red color, very

dense, weighing six pounds and nine ounces; the liver was enlarged, reaching as high as the fourth rib on the right side, and weighing eight pounds nine ounces; heart enlarged, color pale, texture flabby, weighing 20 ounces; the rest of the viscera apparently natural and healthy.

Article 29. Conservative Surgery, with a list of the Medical and Surgical Force of New York, in the War of the Rebellion, 1861-2. Alphabetically arranged.

By SYLVESTER D. WILLARD, M. D., Albany, N. Y.

As the wealth of a State consists in the number of its population, so the strength of an army depends not only upon its numbers, but in their ability to put in exercise the munitions of warfare. And this ability depends not only upon the skill of commanding officers to direct the movement of troops, but in the physical strength of troops to endure wearisome marches and fierce engagements in battle. The first and most important qualification of soldiers then, is health; and to exercise a surveillance over them and to keep them in health, is the duty of the surgeon. In the formation of an army the surgeon is as important and indispensable as the general.

Nor do we any longer associate with the army surgeon the idea of a man who sees before him hundreds of wounded soldiers, with no other feeling than the variety and opportunity they afford him for an almost indiscriminate use of the catling or scalpel, and who only sees in mutilated limbs and broken bones what *can* be amputated, instead of what possibly *may* be saved; who seeks to dispatch a case suddenly, by giving it a positive character, rather than by patient waiting to aid nature in its restoration. That the army is a place to learn surgery, has been an opinion very generally received; that it has been learned at the expense of many a poor soldier, whose limbs might have been saved, may as truthfully be added.

The events which within the last year have plunged our nation into the evils of a civil war, are calculated to develop a new era in the history of military surgery, and install the military surgeon with new dignities and more humane duties. His chief duties are no longer those of the mechanical or skilful operator, but they are extended to the protection and almost parental care of the soldiery.

The principles of hygiene and sanitary science are now un-

folded, and thrown as a protection around the army to insure it against the diseases of the camp, which have ever proved more fatal in the march of armies than the bullets and shells of the enemy. We need only to cite the instances of sickness and mortality in the French army at the Crimea, as reported by Dr. G. Scriver, the Surgeon General of the army. That war lasted for twenty-four months, summer and winter, without any intermission. The entire number of French troops that were sent to the East amounted to 309,268 men. Of this number, 200,000 were received in ambulances and hospitals, for medical aid. 50,000 for wounds, and 150,000 for diseases of various kinds. The total mortality was 69,229; or $22\frac{1}{3}$ per cent. 16,325 of these died of wounds, and about 53,000 from diseases. Thus, those by diseases, it will be seen, are more than three times the number of those destroyed by wounds. There were, of ordinary wounds, 2,185; gunshot wounds, 22,891; frost-bitten, 3,472; typhus fever, 3,840; cholera, 8,196; scurvy, 17,576; feverish, 63,124; venereal, 241; itch, 124. There was a great mortality from scurvy and frost bites. Of the 25,076 cases of ordinary and gunshot wounds, it will be observed that there was the immense mortality of about seventy-five per cent., notwithstanding all that skilful surgery could do to avert such melancholy results. Many of these cases terminated doubtless as the sequels of operations, by traumatic fever, hemorrhage, excessive suppuration, spasms, erysipelas, gangrene, pyemia and tetanus. Pyemia at the Crimea was one of the chief sources of danger after operations. How many of that 16,325 might have been saved by a more conservative surgery, and thus avoiding the sequelæ of operations as dangerous as the wounds themselves, is a problem perhaps not easily calculated. But might not an increased vigilance in the sanitary and hygienic regulations averted the pneumonia, and the typhus and the fevers, by which the fearful number of 150,000 troops were prostrated in a period of two years, and of which 53,000 died—a mortality of $33\frac{1}{3}$ per cent; and doubtless the lives of many others were shortened by exposure and disease that developed with fatal results after the termination of the war. This comparison is not instituted for the purpose of deprecating skillful surgery. We award to it the relief it brings, and the grand results it achieves.

In the hands of the conservative surgeon neither the officer or those of his command have anything to fear. In the hands of

the bold, dashing operator, and such sometimes find their way to the surgical staff, there is more cause for apprehension. But the point intended to be illustrated by the comparison is, that if all cases requiring capital operations, doubtful in their results, were abandoned to nature, and the skill of the surgeon directed to the prevention of disease, by discovering and avoiding the sources of malaria, by careful inspection of the dress and diet, the amount of fatigue incurred, and the general hygienic condition of the camp and hospital, whereby the sickness of the 150,000 might be diminished and the fearful mortality of $33\frac{1}{3}$ per cent. lessened, the strength of the army would be increased and therewith a saving of human life greater than that hoped for by the most brilliant surgical operations. This position in favor of conservative surgery is elucidated and sustained by the remarks of a surgeon in the volunteer service of great practical experience, who writes from a distant field of service, where he has had opportunity to put into practice the precepts* of military surgical authorities: "I conjure you," says he, "in the august name of that humanity which should be identified with the title of surgeon, to guard young surgeons against yielding to their eagerness to *cut*, and also to counsel against primary amputations, particularly in the thigh where there is a large wound of the soft parts combined with fracture of the bone. Of the three 'primary' amputations performed in my presence yesterday, the subjects all died, one of them in the very act of the operation. In each of these cases, with the rules of army surgery stated by the eminent army operators fresh in my mind, I silently dissented from the practice." Should the dissent have been silent? Could not the unfavorable prognosis have been foreseen and the operations avoided or delayed until they gave some slight promise of success?

The call for surgeons to supply the volunteer troops of the State of New York, has been responded to with a zeal worthy of a noble profession, with an enlightened and liberal patriotism that sheds a luster upon the escutcheon of the Empire State, and which has already reflected honor upon our nation, and given distinction by its heroism and fidelity to our national arms. Among the number are some of the most accomplished surgeons in the country, and one† who is among the distinguished members of our society, to whom we point with just pride.

* Am. Med. Times, March 29, 1862, p. 182. † Prof. Frank H. Hamilton.

It has been my object to collect from official sources the entire medical and surgical force from the State of New York, which has been engaged in this unhappy war, and to arrange it in such a form as to give it convenience for future historical reference to the whole profession and to the State. No place could be more appropriate for its publication than the Transactions of our Society. My first thought was to refer, by foot notes, to the many interesting articles published in the journals of the day, by the various members of the medical staff, but I soon found that such a plan would be necessarily incomplete on account of the limited number of medical periodicals that might come under my own eye, and it was accordingly reluctantly abandoned.

No ordinary interest would now be attached to a full account of the surgeons of the Revolution and a history of their operations, or to those which our State furnished in the war of 1812. Whatever either accomplished, their names and labors find no record on the page of history.

In the number who compose the medical staff of the State of New York, I do not include those citizens of this State who were already in the regular army or navy service when the war began, or those engaged in the three month militia service, but

1st. Those who were examined by the Naval Board after the commencement of the war.

2d. Those who were examined by the Army Board after the commencement of the war.

3d. The Sanitary Commission.

4th. Those examined by the Medical Board at Washington.

5th. Those examined by the Medical Board at Albany.

The sanitary commission, as is well known from their frequent published documents, was organized at Washington on the 13th of June, 1861, in accordance with a suggestion made to Mr. Cameron, the Secretary of War, by the acting Surgeon General, R. C. Wood, on the 22d of May previous. The suggestion met the approval of the Secretary of War and received the approbation of the President, Mr. Lincoln, on the 13th of June, the same day on which the commission was organized. Its object was to lessen the pressure upon the medical bureau in view of so large an army, and to direct the "intelligent mind of the country to practical results connected with the comforts of the soldier by preventive and sanitary means." It includes in its range all that refers to the health, comfort and morale of the troops; by

seeing how far a volunteer force may be speedily brought to conform to the standard regulations of the regular army; by making scientific inquiry into all that relates to camp grounds, clothing, tents, cooks, cooking and diet; by exercising precaution against excess of heat and cold; by guarding against the influences of malaria and infection; by providing early and ample comforts for the sick and wounded, by general attention to military hospitals; these investigations to be guided by the highest medical and military experience and foresight.

The commission have labored diligently and achieved much towards carrying out their original designs. They have appointed a large number of associate members* in all the loyal states to co-operate with them in their benevolent and patriotic measures; and already more than forty documents, some of them written with marked ability, have been published under their authority.

The record of brigade surgeons, which was obtained from the Surgeon General's department in Washington, shows that of the twenty-two who were examined by the medical board in Washington, six had already been examined in Albany, and appointed to the charge of regiments.

The examining board at Albany, was organized on the 19th April, 1861. by His Excellency, Governor Morgan, upon the suggestion of Surgeon General Vanderpoel. The board consisted of Drs. Alden March, Thomas Hun, and Mason F. Cogswell, gentlemen well known for their high toned professional accomplishments, their sterling integrity, and their earnest patriotism. Up to the 10th December, the board had examined 468 applicants, 228 of whom were accepted as qualified to act as surgeons, and 137 as assistant surgeons.

The plan of the examination was by a series of printed questions that were placed before the applicant, answers to which he was required to write within a given time, as concisely and completely as possible, without consulting books or persons. The topics embrace anatomy, surgery, chemistry, theory and practice of medicine, and therapeutics.

The answers were carefully examined together with testimonials of character and skill, and in view of the same the grade of the applicant was determined. This board remark in its report to the Surgeon General, that "It is believed the list embraces a

* List of members; Sanitary Document No. 34; Dec. 7, 1861.

body of men possessing that character, education, practical skill and experience which all so earnestly desire, may be secured in behalf of the health and the lives of our volunteer forces."

The inquiry has been so often repeated as to the character of these examinations that I make no apology for appending a copy of the series of questions. They may be found also in the report of Surgeon General Vanderpoel, to the Governor and Commander-in-chief of our State forces, and are as follows :*

Copy of questions submitted Applicants by Examining Board.

First series.

Each candidate will, without reference to books, furnish written answers to as many of the following questions as the allotted time will allow. The answers should be concise, and at the same time as complete as possible.

Each answer should be numbered to correspond with the number of the question.

The paper containing the answers is to be signed, and, together with this sheet, inclosed in a sealed envelope, on the back of which the name and address of the candidate are also to be written.

1. Describe the course and relative position of the femoral artery ; also the operation of ligature of the femoral artery.

2. Answer the same questions in regard to the brachial artery.

3. Give the names, situation and distribution of the principal nerves of the upper extremity.

4. Describe the operation of amputation of the thigh. Describe the operation of amputation of the leg. Describe the operation of amputation of the forearm.

5. Describe the dressing and subsequent treatment, and the accidents which may follow these operations.

6. Give the diagnostic signs of compression and concussion of the brain, and the general treatment applicable to each.

7. Describe the accidents accompanying incised wounds, and the treatment.

8. Describe the characters and treatment of lacerated wounds.

9. Give the characters and accidents peculiar to gunshot wounds, and the general treatment.

10. What are the rules for amputation in cases of gangrene ?

11. Under what circumstances is traumatic erysipelas liable to come on, and how it is to be prevented and treated ?

12. What are the symptoms of shock or collapse, following severe injuries ? Give the treatment of this condition.

13. Give the hygienic and medical treatment of dysentery occurring in camp life.

* Assembly Doc. No. 12, 1862.

14. What are the constitutional disturbances caused by burns? Give the general and local treatment.

15. Give the chemical composition, medical uses and mode of administration of the following substances; calomel, corrosive sublimate, iodide of potassium, epsom salts, sulphate of copper, lunar caustic.

Copy of questions, second series.

1. Describe the different dislocations of the os humeri—the diagnostic signs of each, and the mode of reduction in each case.

2. Answer the same questions in regard to the dislocations of the hip joint.

3. Describe the course and relative position of the arteries of the forearm and hand.

4. Describe the operation of ligature of the anterior tibial artery. Describe the operation of ligature of the radial artery. Describe the operation of ligature of the external iliac.

5. Describe the operation for strangulated inguinal hernia, dressing and subsequent treatment.

6. Give the most important means of arresting hemorrhage from incised wounds; also from punctured wounds.

7. Give diagnostic signs and treatment of fracture of the lower portion of the radius; also of the lower portion of the fibula.

8. Give the symptoms of scurvy, its causes, mode of prevention and treatment.

9. Give the symptoms and physical signs of the different stages of pneumonia.

10. Describe the danger of penetrating wounds of the thorax; the symptoms of wounds of the lung; and the general management of such accidents.

11. Give the general character and treatment of gunshot wounds.

12. Give the treatment of wounds of the intestines.

13. What is meant by pyæmia? Under what circumstances does it occur? How is it to be recognized and treated?

14. Give the medicinal properties, modes of administration and doses of the following substances: aloes, jalap, calomel, opium, tartarized antimony, sulphate of zinc.

Copy of questions, third series.

1. Describe the symptoms and course of typhoid fever, its anatomical lesions and treatment.

2. Give the causes, symptoms and treatment of bilious remittent fever; also of intermittent fever.

3. Give the symptoms, physical signs and anatomical lesions of pericarditis.
4. Give the symptoms of hectic fever, the circumstances under which it occurs, and its treatment.
5. Describe phlebitis, its causes and its consequences.
6. Describe the causes and consequences of varicose veins of the leg, and the mode of management.
7. Describe some of the principal acute inflammations of the eye; explain the tissues involved, and give the treatment.
8. Describe the primary, secondary and tertiary forms of syphilis, the diagnosis and treatment.
9. Describe the dangers and general mode of treatment of fractures, simple, compound and comminuted.
10. Describe the apparatus necessary for dressing a fracture of the femur, and its mode of application.
11. Answer the same question in regard to fracture of the tibia.
12. Give the rules for applying ligatures to large arteries, and the subsequent treatment.
13. Describe the course and situation of the large arteries and veins of the neck.
14. Give the symptoms and physical signs of phthisis pulmonalis in its early stages.
15. Give the medicinal uses, the doses and mode of administration of the following substances: digitalis, extract of belladonna, nitrate of potash, tartar emetic, chloroform, cod liver oil.

Copy of questions, fourth series.

1. Describe the origin, position and distribution of the sciatic nerve.
2. Describe the origin, course and general distribution of the fifth pair of cranial nerves.
3. Describe the ligaments of the hip joint.
4. Describe the origin and course of the right and left primitive carotid arteries.
5. Enumerate and describe the membranes of the brain.
6. Under what circumstances is the operation of trepanning necessary? Describe the operation and subsequent treatment.
7. Describe the operation of ligature of the femoral artery, the subsequent treatment and the accidents which may follow the operation.
8. Give the causes and treatment of fistula in ano.
9. Give the diagnostic signs, prognosis and treatment of fracture of the femur within the capsular ligament.
10. Describe the operation of amputation of the thigh, the dressing and subsequent treatment.

11. Describe the accidents which may follow amputation.
12. Give the symptoms, course and anatomical lesions of typhoid fever.
13. Give the symptoms, physical signs and modes of termination of acute and chronic pleurisy.
14. Describe the organic lesions which give rise to dropsical effusions.
15. Give an account of the principal constituents of the blood.
16. Give the medicinal uses and modes of administration of the following substances: nitrate of silver, senna, sulphate of magnesia, colchicum, digitalis, opium, hyoscyamus, corrosive sublimate.

Copy of questions, fifth series.

1. Give the commencement, course, termination and relations of the jugular veins.
2. Give the diagnostic symptoms of paralysis of the facial nerve.
3. Describe the operation of excision of the knee joint, and also of the elbow joint, and state in what cases these operations should be preferred to amputation.
4. In cases which admit of a choice, which method is to be preferred in amputation of the foot? Describe the operation.
5. Give the diagnosis and treatment of fractures of the clavicle.
6. Give the differential diagnosis between hernia and varicocele, and describe the operation for the radical cure of the latter.
7. Give the causes and treatment of hemoptysis.
8. Give the causes and treatment of retention of urine, and describe the method of introducing the catheter.
9. Give the symptoms, cause and treatment of acute rheumatism and its complications.
10. Give the symptoms and treatment of diphtheria and its sequelæ.
11. Describe the primary, secondary and tertiary forms of syphilis, the diagnosis and treatment.
12. Give the tests for albumen, and also for sugar in the urine.
13. Write out in full a prescription for a purgative pill, a diuretic mixture, and a cough mixture.

In presenting the list of surgeons of the volunteer force which I have arranged in a tabular form, I take pleasure in acknowledging my indebtedness to Surgeon General Vanderpoel, for affording me every facility in its preparation, by allowing me free access to his official records, nor can I here forbear to speak of the very able and faithful manner in which the arduous and respon-

sible duties of his office have been performed. Surgeon General Vanderpoel's early and persistent measures for the revaccination of the troops, (and his returns show the only statistics of revaccination in the present army,*) his energy in establishing hospitals at the general depots, his constant attention and watchfulness for the general health of the troops, his efforts to supply efficient surgeons to the various regiments, together with the minor duties, have been executed with indefatigable energy, and with an ability and patriotism that reflect credit not only upon our profession but on the State of New York.

* See Sanitary Commission Document E, page 26.

The Naval Medical Board, which convened in the early summer of 1861, and was dissolved by an order of the Secretary of the Navy, on the 27th of January, 1862, its duties being completed, accepted the following candidates:

NAMES.	Age.	Where graduated.
Adams, Newton H.		Albany Medical College.
Allingham, James J.		College of Physicians and Surgeons.
Brown, Wm. Mann.		Buffalo University.
Brush, George R.		College of Physicians and Surgeons.
Clarke, Stephen H.		University of New York.
Covell, Charles E *.....		University of New York.
Carter, Charles		College of Physicians and Surgeons.
Chalmers, William		College of Physicians and Surgeons.
Gunning, J. Henry.....		University of New York.
Hall, Watson C.		Geneva Medical College.
Lewis, F. B. A.....		Harvard University.
Murphy, John D.		University of New York.
Plant, William S.....		University of Michigan.
Tevey, Wm. F.		University of New York.
Smith, Heber.....		College of Physicians and Surgeons.
Storm, George D		Buffalo University.
Zinsin, Lewis		McGill College, Montreal.

NOTE.—Sixteen of fifty-nine were from the State of New York.

* Charles E. Covell was born in Hartford, Washington Co., New York, in 1837. He was a student of Dr. J. Swinburne, in Albany, and was graduated in medicine at the University of New York in 1860. He became resident physician to the Children's Hospital, and subsequently became an interne at Bellevue Hospital, where, by his intelligence and fidelity, he gained warm friends. On the breaking out of the present war, he determined to enter the naval service, and was accordingly examined June 14th, 1861, before the Naval Board. He at once received orders, and sailed on the "CITY OF NEW YORK" on the 7th July for Pensacola. On the 22d July he was transferred by the United States flag ship MISSISSIPPI to the U. S. Frigate COLORADO, where he entered his duties as the assistant of Dr. Horner, the Surgeon of the fleet. He was in a few days seized with dysentery, of which he died on the 7th day of August, 1861. A few hours before he died, he penned a beautiful and affectionate letter to his mother, telling her of the fate he was in a few hours to meet, and of God's grace, which was sustaining him as the fatal hour approached. Thus was suddenly terminated a life full of professional zeal and promise. It was given to the cause of Liberty. Thus were crushed a mother's hopes in her only son. Such is the price of Liberty.

S. D. W.

The following gentlemen were candidates for the Medical Corps of the United States Army, from the State of New York, who were examined and approved by the Army Medical Board, convened in New York, May, 1861.

NAME.	Age.	Where graduated.	Year.
Bell, John	29	University of Pennsylvania	1854
Gray, Charles C.*	23	Hobart College, Geneva	1860
Gourley, John W. S.	29	College of Physicians and Surgeons	1858
Goddard, Charles E.	23	College of Physicians and Surgeons	1859
Dunster, Edward Swift	27	New York Medical College	1859
Horton, Samuel M.	23	Jefferson Medical College	1861
Howard, Benjamin	25	College of Physicians and Surgeons.	1859
Pooley, James H.	23	College of Physicians and Surgeons.	1860
Sprague, Havilah M.	27	University Medical College, N. Y.	1861
Spencer, William C.	23	Jefferson Medical College	1860
Steinberg, George M.	23	do do do	
Temple, Joseph E.	29	Jefferson Medical College	1853
White, Charles B.	24	University Medical College, N. Y.	1859
Weir, Robert Fulton	23	College of Physicians and Surgeons	1859
Winne, Charles K.	23	Jefferson Medical College	1859
Beardsley, Grove S.†	23	University of New York	1859

* "Would not leave his wounded." Prisoner at Bull Run and still unexchanged, June 5, 1862.

† Subsequently passed the Naval Board, and declined an appointment in the army.

The Sanitary Commission consists of the following gentlemen:

Rev. Henry Bellows, D. D., President, New York.

Prof. A. D. Bache, M. D., Vice President, Philadelphia.

Elisha Harris, Corresponding Secretary, New York City.

George W. Cullum, U. S. Army.

Alexander E. Shiras, U. S. Army.

Robert C. Wood, M. D., U. S. Army.

William H. Van Buren, M. D., New York.

Wolcott Gibbs, M. D., New York.

Cornelius R. Agnew, M. D., New York.

J. S. Newbury, M. D.

George T. Strong.

Subsequently added as commissioners under the authority of Secretary of War.

Frederick Law Olmstead.

Samuel G. Howe, M. D.

Horace Binney, Jr.

Rt. Rev. Thomas M. Clark, D. D., of Rhode Island.

Frederick Law Olmstead was appointed General Secretary at Washington.

J. Foster Jenkins, M. D., of Yonkers, New York, Secretary for the Army of the Potomac.

J. H. Douglas, M. D., of New York City, Secretary for the divisions under Generals Banks, Dix and Wool.

J. S. Newbury, M. D., Secretary for the western armies.

Franklin B. Hough, M. D., of New York, Secretary for the Army of the Potomac.

Surgeons who have been appointed to the charge of Brigades from the State of New York, and who were examined by the Medical Board in Washington.

NAMES.	Age.	Where assigned.
Aspell, Thomas S.		General Wool's Division.
† Bontecou, Reed B.*		
Brown, Rufus K.		
Burr, George		
Chamberlain, M. W.		
Church, W. H.		General Hunter, Missouri.
Dalton, John C., Jr.		
Hamilton, Frank H.*		
Hewitt, Henry S.		
Hoff, Alexander H.*		
Lidell, John A.		General Dix's Division, Baltimore.
McMillan, Charles		
Mosely, Nathaniel R.*		
McNulty, John*		
Oliver, George H.*		
Otterson, William C.		General Anderson, Kentucky. General Landers.
Spencer, T. Rush*		
Strew, William W.		
Suckley, George		
Thompson, J. Harry*		
Thurston, A. Henry		

* Previously examined by the Medical Board at Albany, and appointed to the charge of regiments.

† In charge of General Hospital at Fortress Monroe, Va.

Examined by the Medical Board at Albany, and passed as Surgeons New York State Volunteers.

NAME.	Age.	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Alexander, Joseph D.	38	University of Virginia	1852	Student in Charity Hospital; in practice 18 years .....	.....	.....
Armstrong, Henry A.	42	New York Med. College	1854	.....	Surg. 2d reg't artillery	.....
Atherly, Joseph	36	University of Glasgow	1851	Bartholomew Hospital 12 months; 3 years at Glasgow	Surgeon 22d regiment..	.....
Andrus, C. H.	38	College Phys'ns and Surgeons ..	1845	In private practice .....	.....	.....
Avery, A. Geor.	40	Univ. of Louisville, Ky.	1845	.....	Asst. Surg. Ma. art'y	.....
Barnes, Norman S.	35	Berkshire College	1852	3 months at Boston Hosp.; 3 months at New York Hosp.	Surg. 27th regiment...	.....
Bachus, Arel.	34	Univ. of Pennsylvania	1851	Had charge of Western House of Refuge 1 to 5 years .....	.....	.....
Baker, Charles H.	43	Albany Medical College	1842	Hospital practice 1 year; in private practice 18 years .....	.....	.....
Bannister, T. O.	28	University of New York	1856	House surgeon at Bellevue hospital 18 months; in private practice .....	.....	.....
Barrows, N.	31	College Phys'ns and Surgeons ..	1856	.....	.....	.....
Bates, C. C.	33	New York University	1854	.....	.....	.....
Bausch, Charles	30	Tubingen	1851-7	Deputy corner of New York .....	.....	.....
Beach, John	30	College Phys'ns and Surgeons ..	1856	In private practice	Asst. Surg. 1st reg't cav	.....
Beake, George M.	30	Albany Medical College	1856	.....	Surg. 75th regiment...	.....
Benedict, Michael D.	47	Yale Medical Institute	1836	In private practice 25 years	Surg. Col. Doubleday's	.....
Berkey, Reese B.	34	Medical Dept. Penn. College ..	1849	.....	1st reg. heavy artillery	.....
Berry, Abraham J. ....	.....	.....	.....	.....	Surg. 38th regiment...	.....
Bidlack, William W.	30	.....	1852	.....	Asst. Surg. 62d reg't...	.....
Bitnell, Eliza L.	28	Michigan University	1861	In private practice	Asst. Surg. 44th reg't...	.....
Bogardus, John C.	24	College Phys'ns and Surgeons ..	1860	.....	Asst. Surg. 102d reg't...	.....
Bontecou, Reed B.	37	Castleton, Vermont	1847	In private practice	Surg. 2d regiment	Promoted to Brig. Sur. Chg Gen. Hos. F. Monroe
Bradley, Thomas	35	Geneva Medical College	1847	.....	.....	.....
Brilliantzsky, Samuel	37	University Berlin	1846	Attended Hosp. in Paris and Germany.	Surg. 41st regiment...	.....
Bruser, J. R.	40	College Phys. and Surgeons	1856	In general practice .....	.....	.....
Brown, Harvey E.	25	University New York	1857	Resident Surg. L. I. Coll. Hosp.; Prof.	Asst. Surg. 70th reg't...	.....
Browne, Rufus K.	27	Long Island College Hospital..	1860	Anatomy N. Y. Medical College .....	.....	Promoted to Brig. Sur.

SURGEONS.—Continued.

NAME.	Age.	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Brueninghausen, Charles ..	51	Berlin, Prussia.....	1829	4 years in Marine Hospital; appointed by Gov. Fish.....	.....	Sur. 7th St'hen Rangers
Buck, Ephraim W.	29	College Phys. and Surgeons....	1857	Eastern Dispensary 1 year.....	Sur. 31st regiment....	
Burr, William J.	43	Geneva Medical College.....	1845	In private practice.....	Asst. Surg. 59th reg't.	
Campbell, Augustus.....	40	Albany Medical College.....	1845	Assistant physician at Bellevue 1 yr; private practice 15 years.....	Sur. 77th regiment....	
Cassey, James W.	27	Buffalo University.....	1862	2 years interne St. Mary's Hospital ..	Asst. Surg. 165th reg't	
Cass, Jonathan	36	Albany Medical College.....	1854	In general practice .....	.....	
Cass, D. Meigs.....	25	New York University.....	1857	Bellevue Hospital 6 months; House Surg. Eye Infirmary 6 months.....	.....	Promoted to Surgeon.
Chamberlain, D. C.	46	Castleton, Vermont.....	1837	In private practice 24 years.....	Asst Surg. 43d reg't ..	
Chapin, Francis L. R.	36	Albany Medical College.....	1851	Albany Hospital 3 months.....	Sur. 165th regiment..	
Chapman, James	32	University New York	1852	.....	Sur. 30th regiment....	
Chase, Eliza H.	34	Jefferson Medical College.....	1854	.....	Sur. 8th reg. cavalry ..	Resig'd, & A Surg 90th
Churchill, Alonzo.....	50	Licensed by Ois. Co. Med. Soc.	1832	In practice 23 years.....	Sur. 104th regiment....	
Churchill, Seymour	48	Woodstock, Vermont.....	1838	In general practice.....	Sur. 14th regiment....	
Clark, A. M.	41	College Phys. and Surgeons	1857	In general practice.....	Sur. 23d regiment	
Cleveland, Warren.....	26	Castleton, Vermont.....	1847	Been Health officer of Brooklyn; in private practice.....	.....	Resigned.
Colgan, Joseph S.	42	Royal Coll. Surgeons, Dublin..	1849	Attended Dispensary in Brooklyn; also Hospital in Dublin.....	Sur. 87th regiment....	
Cooper, William S.	42	Albany Medical College.....	1861	Practiced 19 years before graduation....	Sur. 59th regiment	
Cottelle, Victor Amede	27	Buffalo Medical College.....	1858	Interne at Lying-in Hospital, Buffalo, 6 mo.; resident phy. Buffalo Hosp....	Asst Sur. Enfant Perdue	
Coventry, Walter B.	27	Albany Medical College.....	1858	Hospital service 6 mo.; 24 years in Hospital London and Paris.....	Sur. 26th regiment....	
Crawdell, William B.	27	Albany Medical College.....	1858	House Surg. Hospital 2 years.....	Sur. 14th regiment....	
Cunningham, Thurlow	28	McVill College, Montreal	1848	In private practice.....	Sur. 101st regiment....	
Cutler, J. L.	33	College Phys. and Surgeons	1849	.....	.....	
Dalrymple, A. P.	36	College Phys. and Surgeons	1851	1 yr at Bellevue; 2 yrs at St. Luke's Hospital.....	Sur. Eng. & Art. reg.	Resigned.
Dalton, Edward B.	26	College Phys. and Surgeons	1856	.....	Sur. 36th regiment....	
Danaher, William R.	31	New York University.....	1852	18 mo. Asst. Surg. at Bellevue; 6 yrs Surg. Demitt Dispensary, &c.....	.....	
DeWitt, William O.	30	Harvard Medical School	1854	9 mos in New York City Hospital....	Sur. 95th regiment....	

D'Avignon, Francis J. . . .	54	Montreal, L. C.	1833	.....	Surg. 96th regiment....	Promoted to Surgeon.
Dexter, James E.	37	New York University	1860	.....	Asst. Surg. 40th reg't.	
Dickerson, D'Estaing	27	Albany Medical College. ....	.....	.....	Asst. Surg. 33d reg't..	
Dilts, George S.	30	New York University	1856	Hospital practice in France, Dublin, &c	Surg. Jackson artillery	
Dimon, Theodore	44	University of Pennsylvania.	1838	Phy. in Auburn State Prison 2 yrs; in private practice	Surg. 19th regiment....	
Douglas, Frederick	25	New York University	1859	Attended Bellevue and N. Y. Hosp. 6 mos; attend. Phy. Rochester Hosp. 1 year	Asst. Surg. 3d reg. cav.	Promoted to Surgeon.
Dumainville, Lucien	22	Long Island Hospital	1860	Asst. of Dr. Rochester at Buffalo Hosp.	Asst Surg. 31st reg't..	
Dunster, Edward L.	27	New York Medical College.	1859	St. Luke's Hosp. 6 mos; acting Surg. Demilt Disp. 2 yrs	Asst. Surg. U. S. A ..	
Ellis, Thomas T.	39	{ Royal College Surgeons, Lond.	1845	{ .....	.....	
Eisenlord, A. M. F.	36	{ Royal College Phys., England	1845	{ .....	.....	
Everts, Franklin.	31	New York University	1844	.....	Surg. 7th regiment....	
Ferguson, Nelson D.	41	College Phys. and Surgeons . . .	1854	At Bellevue Hosp. 1855; Hosp. Paris and London 1856.	Surg. 1st reg't artillery	Resigned, and app'ted Surg. 8th cavalry.
Fisher, George J.	36	Geneva Medical College. . . .	1844	In private practice nearly 18 years . .	Surg. 97th regiment ..	Consolidated to 95th and must. out service.
Fiske, S. N.	24	University New York	1849	Surgeon Sing Sing prison, Priv. Prac.	Sur. 3d reg. Eagle Bride	Resigned.
Foy, M. Eyre	37	New York University	1860	.....	Surg. 25th regiment ..	Deceased.
Froehlich, Moritz A.	31	L. R. C. of Edinburgh.	1846	7 yrs Surg. British army; several yrs in Hosp s of Europe	Surg. 38th regiment ..	
Frothingham, William	31	{ Tubingen	1854	{ In private practice	Surg. 8th regiment....	
Glennan, Patrick	35	{ New York Medical College . . .	1856	{ Bellevue Hosp. 2 yrs.	Surg. 44th regiment ..	
Goodale, Charles.	44	College Phys. and Surgeons.	1854	.....	.....	Resigned.
Goodrich, Charles S. . . . .	.....	Geneva Medical College.	1850	.....	Surg. 94th regiment....	Resigned.
Gouley, J. W.	29	Albany Medical College	1841	.....	Surg. 102d regiment ..	
Gibbs, T. C.	34	.....	1829	Prof. Anatomy N. Y. Med. Coll.; 10 yrs Hosp. practice .....	.....	
Gilbert, Rufus H.	29	College Phys. and Surgeons . . .	1853	.....	.....	Promoted to Brig. Sur.
Gray, E. P.	37	Castleton, Vermont	1853	In general practice	Surg. 5th regiment....	
Hack, John William	45	College Phys. and Surgeons.	1852	1 yr in army South Florida; 1856 Surg. on steamer; general practice.	Sur. 78th reg.	
Hackley, Charles E.	25	University of Buffalo	1849	Private practice .....	.....	
Hall, James A.	45	Saxony	1839	Hospital practice 3 years	Surg. 7th reg't cavalry	
Haerle, F.	26	University of Pennsylvania.	1859	.....	Surg. 49th regiment....	
Hagen, Charles W.	32	Bowdoin, Maine.	1838	Asst. Dem. when grad.; in gen'l prac.	.....	
Halacy, C. E.	27	Tubingen, Wurtemberg	1859	.....	Surg. 54th regiment ..	
		St. Louis, Medical College	1861	.....	Asst. Surg. 40th reg't.	
		College Phys. and Surgeons.	1858	L. Island Hosp. 1 yr; in private prac.	.....	

SURGEONS.—Continued.

NAME.	Age	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Hamilton, Frank H.	33	Vienna, Austria	1859	Hosp. Vienna, Wurtzburg, Tubingen, &c	Surg. 31st regiment...	Promoted to Brig. Sur.
Hansen, Julius	37	New York University	1859	House Surg. Bellevue Hosp. 1 yr; ship Surg. 1 voyage	Surg. 20th regiment...	Promoted to Brig. Sur.
Hoyt, J. H.	30	Albany Medical College	1858	In general practice	Surg. 10th regiment...	Promoted to Brig. Sur.
Hedder, F. Lewis	36	Heidelberg, Freyburg	1858	Surgeon of steamship "Hudson Wiser" and "New York," &c	Surg. 103d regiment...	
Helland, Charles	28	Tubingen, Kingeven	1858	Visitor at Bellevue and N. York Hosp. for 8 mos.	Asst. Surg. 20th reg't.	
Helmer, Albert M.	29	University of Michigan	1858		Surg. 28th regiment...	
Hermann, August	35	College Phys. and Surgeons	1858		Asst. Surg. 29th reg't.	Resigned.
Hessell, Ferdinand	28	Marburg, Hesse	1856	In private practice 3 years	Surg. 58th regiment...	Resigned.
Hewett, James D.	27	New York University	1858		Asst. Surg. 66th reg't.	
Hewitt, Henry	64	Medical Dept. Yale College	1826	House Surg. at Bellevue 1 year	Surg. 92d regiment...	Resigned.
Hicks, J. Lawrence	26	College Phys. and Surgeons	1860	House Surg. at Bellevue 1 year	Surg. 1st regiment...	Promoted to Brig. Sur.
Hoff, Alexander H.	39	Jefferson Medical College	1845	Hosp. service some years	Surg. 3d regiment...	
Hoffmann, Edward S.	31	College Phys. and Surgeons	1855	In private practice 7 years; attending Surgeon Troy Hospital	Surg. 90th regiment...	Reg. disab'd and app. Sur. 12th reg't inf.
Hubbell, Charles L.	34	Berkshire Medical College	1855		Surg. 2d reg. B. H. cav.	
Huret, Henry	35	Göttingen, Germany	1852		Surg. 46th regiment...	
Howard, Benjamin	26	College Phys. and Surgeons	1857	House Surg. Jew's Hosp. New York; Ship Surg. Atlantic line	Asst. Surg. 19th reg't.	Resigned & app. U. S. A. Promoted to Surgeon.
Howe, John	22	New York Medical College	1859	1 year House Phy. at Bellevue, &c	Asst. Surg. 1st reg't.	
Humphreys, George H.	26	Jefferson Medical College	1856	Student 2 yrs in Hosp. Vienna, Berlin, Paris	Surg. 9th regiment...	
Hutchinson, William F.	24	New York University	1858	Army service in Charleston harbor; in Charity Hosp., New Orleans	Asst. Surg. 22d reg't.	
Ideler, Hermann	42	School of Berlin, Prussia	1844	Hospital practice in Berlin	Surg. 45th regiment...	
Irwins, Charles K.	36	Albany Medical College	1855	In practice since grad.	Surg. 72d regiment...	
Jackson, John S.	39	University of Michigan	1852	In private practice	Surg. 86th regiment...	
Jenkins, J. Foster	35	University of Pennsylvania	1848	Visitor at Mass. General Hosp. 6 mos.	Sanitary Commission...	
Jenkinson, Conrad	43	Wurtzburg	1848		Asst. Surg. 3d Bat. Art.	
Jungbauer, L. H.	28	Munich, Wurtzburg, &c.	1856	Asst. at Lunatic Asylum, Flatbush, 1 year, &c.		
John Debevoise	26		...	Externe and interne of Paris Hosp'la.		

26	Kelsey, Dana E.....	1857	Albany Medical College.....	1857	Attending Hosp. New York and London	Ast. Surg. 64th reg't.
55	Kinnier, James	1822	University Glasgow	1822	Passed by Royal Coll. Phy., London; competent for British service.....	.....
34	Kittinger, Martin S.	1853	College Phys. and Surgeons.....	1853	.....	Surg. 100th regiment.
49	Kneeland, Jonathan.....	.....	Licensed by Onon. Co. Med. So.	.....	In private practice.....	Volunteer Surg.
28	Knight, William W.	1855	Berkshire Medical College	1855	In general practice.....	Ast. Surg. 19th reg't now 3d artillery.
37	Koehler, Augustus.....	.....	Wurzburg, Prague.....	.....	Surg, Austrian army 4½ years; in prac- tice 8 years .....	.....
39	Leach, George H.....	1846	Castleton, Vermont.....	1846	In practice—chiefly surgical	Surg. 57th regiment ..
40	Legler, Henry T.....	1844	Leipzig, Germany.....	1844	.....	Ast. Surg. 8th reg't..
32	Lewis, John D.....	1854	Albany Medical College.....	1854	4 mo. Albany Hosp.; 3 mo. Buffalo Hos.	Ast. Surg. 85th reg't.
27	Little, David	1858	College Phys. and Surgeons.....	1858	Ast. and House Phy. Bellevue, 18 mo.	Surg. 13th regiment....
39	Little, William B.....	1860	Bowdoin College, Maine.....	1860	.....	Surg. 32d regiment....
25	Lyman, William C.....	1859	Berkshire Medical College.....	1859	.....	Ast. Surg. U. S. navy
24	Lynch, Edmund	1860	Long Island Hospital	1860	Ast. at Long Island Hosp. 1 year....	Ast. Surg. 6th reg't..
24	Lovejoy, George W.....	1859	College Phys. and Surgeons....	1859	Surgeon Eastern Dispensary 18 mos...	Ast. Surg. 4th reg't..
40	Major, Adolph	1843	University Heidelberg	1843	Military service in 1848, '49, in Ger- many; in practice 12 years	Surg. 4th cavalry.....
42	Mansfield, Wm. Q.....	1847	Buffalo University	1847	In general practice.....	Ast. Surg. 92d reg't..
32	Marquerat, E.....	1859	New York University	1859	.....	.....
23	Martin, B. Ellis.....	1861	College Phys. and Surgeons....	1861	.....	Ast. Surg. 5th reg't..
30	Martindale, Frank E.....	1852	Albany Medical College.....	1852	Dep. Health officer at Quarantine 2 yrs.	.....
55	Marvin, L. J.....	1827	Fairfield Medical College	1827	.....	Surg. 97th regiment....
27	Mattimore, Frank J.....	1860	Albany Medical College.....	1860	Ast. 1 yr at Albany Co. Hosp. Asylum	.....
30	May, Henry C.....	1856	Michigan University	1856	In practice 5½ years.....	Surg. 5th regiment....
30	McDermott, Wm. J.....	1853	New York University	1853	Surg. 3 mos. 6th regiment N. Y. S. M.; attended Hosp. New York and Paris	Surg. 60th regiment....
39	McDonnell, Edward.....	1842	College Surgeons, London	1842	.....	Ast. Surg. 1st Artil...
31	McKay, Lawrence	1845	College Physicians, London....	1845	In practice 6 years.....	Surg. 6th reg't cavalry
30	McLean, Le Roy.....	1850	Buffalo Univ. Med. College....	1850	1 year Ast. House Physician Albany Hosp.; 4 years Marshall Infirmary..	.....
45	McNair, James	1839	Lond. Coll. Phys. and Surgeons.	1839	In priv. practice 11 yrs; in Ireland 10 yr	Ast. Surg. 2d reg't....
36	McNulty, John.....	1853	New York University.....	1853	.....	Surg. 15th regiment..
41	McNutt, Hiram	1845	New Hamp. Medical Institute .	1845	In practice 16 years.....	Surg. 37th regiment ..
32	Mercer, John T.....	1855	.....	1855	.....	.....
35	Merrill, Andrew	1850	Geneva Medical College	1850	.....	Ast. Surg. 61st reg't.
24	Metcalfe, George W.....	1857	New York University	1857	In private practice.....	Ast. Surg. 76th reg't.
45	Morris, Robert.	1846	Albany Medical College	1846	In private practice 15 years	Surg. 91st regiment....
35	Moseley, Nathaniel R.	1847	University of Pennsylvania....	1847	2 years in charge Med. Dept. Blockley Hospital, &c.....	Surg. 36th regiment....

SURGEONS.--Continued.

NAME.	Age.	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Moses, Israel.....	37	College Phys. and Surgeons....	1845	Surgeon in U. S. A. 1846 to 1855; 1 year in Paris Hosp.	.....	Lieut. Col. 72d reg't.
Mucke, Frans.....	28	Greifswald, Prussia.....	1856	4 years Assistant Surgeon in Hospital.	Asst. Surg. 68th reg't.	Promoted to Surgeon.
Mudie, Archibald F.	25	College Phys. and Surgeon.....	1860	.....	Asst. Surg. 15th reg't.	Resigned.
Mulford, Sylvanus S.	31	College Phys. and Surgeons....	1855	.....	Asst. Surg. 35th reg't.	Promoted to Surgeon.
Murdoch, James B.....	31	College Phys. and Surgeons....	1854	House Surg. at Bellevue 2½ yrs; Surg. on steamer.....	Surg. 21th regiment..	
Nelson, Judson C.	36	Geneva Medical College.....	1845	In practice 18 years.....	Surg. 76th regiment....	
Nawhaus, Charles Ed.....	41	Berlin.....	1846	Asst. Surg. Prussian army; visited 4 year- Hosp. Berlin, Germany.....	Surg. 29th regiment....	
Nordquist, Charles J.	39	New York University	1854	4 years in Hosp. of Europe; 7 years in practice.....	Surg. 83d regiment ...	
Oliver, George H.....	29	Harvard University.....	.....	.....	.....	Promoted to surgeon.
O'Meagher, William	29	New York University	1857	2 years St. Vincent Hospital.....	Asst. Surg. 37th reg't.	
Palmer, John M.	40	Licensed by County Med. Soc..	1844	In private practice.....	.....	
Palmer, William H.	31	New York University	1858	.....	Surg. 3d reg't cavalry.	
Parsons, William W. D....	29	New York Medical College	1853	In private practice.....	.....	
Pease, Philo C.....	26	Long Island Hospital.....	1860	Resident Surg. at Long Island 1 year.	Surg. 6th regiment....	Resigned--app. Surg.
Pease, Roger W.....	34	Geneva Medical College.....	1847	Baltimore Infirmary 7 years 3 months.	Surg. 12th regiment....	10th reg't cavalry.
Perkins, E. T.	34	College Phys. and Surgeons....	1856	Surg. Atlantic and Isthmus steamers.	.....	Resigned.
Perry, John L.	46	Vermont Medical College.....	.....	In general practice 25 years.....	Surg. 77th regiment ..	
Petherbridge, John D.....	34	University of Pennsylvania....	1847	.....	Surg. 65th regiment ..	
Phillips, Henry John.....	31	{ College Surgeons. London	1849	{ On Med. staff thro' Crimean war, '54	Surg. 53d regiment....	{ Reg. dis'd., app. sur- geon 102, and res'd.
Plumb, S. Hiram.....	42	{ St. Andrews, Scotland	1857	{ In private practice.....	Asst. Surg. 24th reg't.	
Potter, Hazard A.....	48	Licensed by Way. Co. Med. So.	1844	Visited Mass. and Philadelphia Hosp.	Surg. 50th regiment....	
Powars, Cyrus.....	44	Bowdoin College, Maine.....	1835	Attending Hosp. Buffalo and New York;	Asst. Surg. 75th reg't.	
Reisberg, Henry W.....	27	Geneva Medical College	1845	In private practice.....	Asst. Surg. 68th reg't.	
Reuss, P. Jos.....	36	New York Medical College	1860	Visited Hosp. in England and America 7 years .....	.....	
Reynolds, Francis	30	.....	1850	Late Asst. Surgeon British army, in Crimea	Surg. 88th regiment....	Promoted Sur. 63 reg.
Reynolds, Lawrence.....	.....	Dublin	1849	.....	Asst. Surg. 24th reg't.	

Rice, Nathan P.	31	Harvard Univ. Med. Dept.	1852	3 years visited Hosp. of Europe; House Surg. Mass. General Hospital.	Surg. 16th regiment.
Rice, Pitkin B.	32	Harvard Univ. Med. Dept.	1853	Been Surg. 28th regiment 3 mo's Vol.	Surg. 81st regiment.
Rice, William H.	40	College Phys. and Surgeons.	1850	Hosp. practice 18 mo.; priv. prac. 11 yrs.	Deceased.
Ruggles, Eli Samuel	32	Edinburgh	1851	1 year Hospital in Detroit.	
Sabin, S. A.	31	University of Michigan	1857	Visited for 2 years Hospital of Glasgow	
Sass, Louis	35	Copenhagen	1847	In active practice 37 years; Member of Congress.	Asst. Surg. 40th reg't.
Schenck, Otto	35	Giesen	1848		As. Surg. 2d reg't cav.
Seldon, Andrew F.	31	New York University	1852		Surg. 34th regiment.
Sherman, Socrates N.	59	Middlebury College, Vermont.	1824	Prof. Surgery Indiana Med. College 8 years.	{ Pro. to Surg. 12th re; { promo. to Brig. Surg.
Shipman, Aarish B.	55	{ Castleton, Vermont { Jefferson Medical College.	1836 1842	Asst. Prof. Surg. N. Y. Med. Coll. '61	
Shultz, Louis	38	Burlington	1846	Asst. Surg. Sisters' Charity Hospital, St. Louis	
Shultz, Augustus	38	St. Louis	1860		Promoted surg. 94th.
Simon, John	32	Göttingen, Hanover	1857		
Stoat, Spencer S.	33	College Phys. and Surgeons	1849		
Smith, Andrew H.	24	College Phys. and Surgeons	1858	In private practice.	
Smith, Joseph T.	30	Jefferson Medical College	1854	Surg. 60th militia regiment; served on Blackwell's Island Hospital staff.	
Smith, J. Paschal	28	New York University	1858	House Surg. at Ward's Island; State Emigrant office 1853 to 1855.	
Smith, Stowbridge	33	New York Medical College	1851	In practice 15 years.	
Smith, William A.	41	Geneva Medical College.	1847	In practice except two winters.	
Smith, William M.	36	Castleton, Vermont	1840	In private practice	Discharged; app. Surg. Serrall's Engr. reg't.
Snow, Asa B.	52	Fairfield Medical Col. N. Y.	1832		
Spencer, Henry T.	34	Albany Medical College.	1852	1 year Hosp. in Albany; 2 years Alms House.	
Spencer, T. Rush.	43	University of Pennsylvania.	1840	Resident Phy. at Blockley Hosp.; 1 year Prof. Geneva Medical College.	Promoted to Brig. Surg.
Squire, Truman H.	38	College Phys. and Surgeons	1849		
Staeble, Francis R.	33	Bern, Switzerland	1858	Served Mass. Gen'l Hosp.; commissioned Medical staff 1841.	Surg. 99th regiment.
Stearns, Charles W.	42	University Pennsylvania.	1840		Asst. Surg. 7th reg't.
Stebbins, Roderick	44	Berkshire Medical College.	1842	In private practice.	Surg. 3d regiment
Steele, Aaron J.	24	Jefferson Medical College	1859	Res. Physician Buffalo Hospital; Dem. of Anatomy Buffalo Med. Coll. 14 mo's	Asst. Surg. 26th reg't.
Stein, L.	50	{ Tübingen { Warzburg	1831 1833		
Steinisch, Adaltrick	33	St. Gall	1854	Att. Hosp., Paris; in practice in N. J.	

SURGEONS.—Continued.

NAME.	Age.	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Stephenson, Mark	47	College Phys. and Surgeons....	1826	2 yrs New York Hosp.; 8 yrs New York Dispensary; 9 yrs Ophthalmic Hosp.	.....	.....
Sternberg, George M.	23	College Phys. and Surgeons....	1860	In active practice.....	Asst. Surg. U. S. army	.....
Stichelberg, George C.	36	Cincinnati and Marietta.....	1854	In practice 6½ years.....	Surg. 52d regiment....	.....
Stow, T. Dwight.....	32	Cleveland College, Ohio	1854	In active practice.....	.....	.....
Strong, Thomas D.....	39	Buffalo University	1851	.....	.....	.....
Stuart, James C.	48	Berkshire Medical College.....	1835	Hospital practice Boston and N. York.	Surg. 17th regiment ..	.....
Terry, W. F.....	27	New York University .....	....	Hosp. practice 13 mos; general practice 3 years.....	.....	.....
Thompson, J. Harny .....	....	.....	.....	.....	Surg. 40th regiment ..	Res; app. Sur. 43d reg; pro. Brig Surg., dis'd
Tice, Lewis	34	New York University	1851	.....	Asst. Surg. 17th reg't.	.....
Tingler, William H.	37	Jefferson Medical College.....	1846	.....	Asst. Surg. U. S. army	.....
Torrey, Charles W.	25	University of Wurzburg.....	1858	.....	Asst. Surg. 51st reg't.	Dismissed the service.
Totten, Gilbert T.	21	College Phys. and Surgeons....	1861	.....	Asst. Surg. 32d reg't..	.....
Townsend, Morris W.	34	Jefferson Medical College.....	1853	.....	Surg. 47th regiment....	.....
Trenor, Euclace	27	College Phys. and Surgeons....	1856	Served 2 mos as Sub. in N. York Hosp.	.....	.....
Van Boust, Bernard.....	30	Leipsic .....	.....	.....	.....	.....
Vanderkief, B. A. ....	....	.....	.....	.....	Asst. Surg. 53d reg't..	Disab'd, surg. 102d reg.
Vandrey, E.....	54	Medical School Paris.....	1836	Surg. to poor in Paris from 1836 to '52	Surg. Infant Periods...	.....
Van Eiten, Solomon	31	Albany Medical College	1855	In active practice	Surg. 56th regiment....	Resig'd; app. Surg. 5th reg't; subsequently dis'd.
Van Ingen, James L.	43	College Phys. and Surgeons....	1843	.....	Surg. 18th regiment....	.....
Van Slyke, David R.....	33	Buffalo Medical College	1852	In practice 9 years.....	Asst. Surg. 101st reg't	.....
Van Slyke, David C.....	40	Geneva Medical College	1850	In active practice	Surg. 35th regiment....	.....
Walker, Edward S.....	37	New York University	1849	In active practice	Asst. Surg. 34th reg't.	.....
Wainwright, D. Wadsworth	27	College Phys. and Surgeons....	1854	In active practice.....	Surg. 4th regiment....	.....
Ward, Hiland A.	27	New York University	1857	In active practice.....	Asst. Surg. 17th reg't.	Pro. to Surg. 25th reg.
Welker, Rudolph	40	University Germany	1845	1st Asst. Surg. of University Hospital.	Surg. 8th regiment....	Promoted to Brig. Surg.
Wellies, Samuel H.....	36	Buffalo Medical College	1848	In private practice	Surg. 61st regiment....	.....
Whedon, George D.....	29	Albany Medical College	1861	.....	Asst. Surg. 10th reg't cav	.....
White, John F. P.....	23	Berkshire Medical College.....	1857	Asst. Surgeon Bellevue Hosp	Asst. Surg. 9th reg't..	Promoted to surg. 10th Resigned.
White, Whitman V.	27	{ Berkshire Medical College..... New York Medical College.....	{ 1857 1858	{ 1 yr in Blackwell's Is. Hosp.; in prac.	Surg. 47th regiment....	.....

Wieber, George.....	36	Stud in Halle, Wurtab'g Giessen	1857	Served in Prussian army.....	First Battalion artillery
Wileux, Charles H.....	...	...	...	...	Surg. 21st regiment...
Wilson, James.....	25	Dublin	1855	In practice 6 years.....	Surg. 99th regiment...
Winne, Charles K.....	23	Jefferson Medical College.....	1854	Surg. in Buffalo Hosp. Sisters of Charity	Asst. Surg. U. S. army
Wolf, Frederick	33	Prague, Austria	1853	.....	Surg. 39th regiment...
Wood, Charles S.....	35	Jefferson Medical College.....	1851	.....	Asst. Surg. 66th reg t.
Wood, Lucian P.....	31	Berkshire Medical College.....	1854	.....	Asst. Sur. 5th regt. cav
Wright, F. Markoe.....	32	Coll. Physicians and Surgeons..	1854	3 years asst. State Lunatic Asylum,	Asst. Surg. Col. Dodge
.....	...	.....	...	and private practice	mounted rifles.
Wunderlick, Gerald.....	56	.....	1828	Practiced in Hosp. at Wurtsburg 26 yrs	.....
Wylie, Farand.....	42	Geneva Medical College	1847	.....	Asst. Surg. 85th reg t.
Young, Oscar H.	25	Albany Medical College.....	1858	House Surg. and Phy. at Albany Hosp.	.....

† Wounded at Hanover C. H. battle.

Examined by the Medical Board at Albany, and passed as ASSISTANT SURGEONS New York State Volunteers, 1861.

NAME.	Age	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Allen, Isaac B.	47	College Phys. and Surgeons	1859	Asst. Surg. Rochester Hospital; practised in Rochester	Asst. Surg. 13th reg't " Rochester reg't.	
Altingham, James J.	25	Albany Medical College	1859	12 years in practice		
Avery, George W.	34	University of Pennsylvania	1860	In N. Y. and Bellevue Hospital	Asst Surg. 98th reg't.	
Ayres, H.	43	Albany Medical College	1860	7 months in Buffalo Hospital; resident physician Erie Co. Hospital	Asst Surg. U. S. N. Asst Surg. Col. Hon-bley's artillery.	
Bacon, James G.	21	Albany Medical College	1860	House Asst. Surgeon at Bellevue for a few weeks	Asst Surg. U. S. N.	
Balch, Gaius B.	22	College Phys. and Surgeons	1861	In private practice	Asst Surg. 9th reg. cav.	Resigned.
Barron, John C.	23	College Phys. and Surgeons	1861	In Bellevue Hospital	Asst Surg. 5th inf'y.	
Bates, Newton L.	24	Jefferson Medical College	1861	In Bellevue Hospital		
Bayles, George	25	College Phys. and Surgeons	1859	In private practice		
Beardsley, Grove S.	23	New York University	1859	House Asst. Surgeon at Bellevue for a few weeks	Asst Surg. U. S. N.	
Benedit, A. C.	24	Yale Medical College	1860	In private practice		
Bennett, George C.	24	Cleveland Medical College	1861	In Bellevue Hospital		
Blauvelt, J. F.	33	College Phys. and Surgeons	1861	In Bellevue Hospital		
Bogert, E. S.	27	New York University	1860	In Bellevue Hospital		
Bogert, R. D.	23	College Phys. and Surgeons	1861	In Bellevue Hospital		
Bradford, Theron	36	Indiana Medical College	1858			
Brown, D. M.	33	Cleveland Medical College	1860			
Brown, Spencer H.	30	New York University	1857		Asst Sur. 2d reg. artil.	Resigned, app. asst surgeon U. S. Navy.
Brown, Edward A.	...	...	...			
Brams, Martin	42	Menningsen, Baruth	1849		Asst Surg. 31st reg't.	
Bryce, William M.	26	College Phys. and Surgeons	1861			
Burck, Charles H.	24	Albany Medical College	1859	In Albany Hospital 10 months		
Burlett, Abram S.	31	College Phys. and Surgeons	1862	In private prac. 7 yrs.; 3 yrs. Hosp. prac.		
Burck, J. T.	30	Worcester, Mass.	1853	In private practice		
Carson, Joseph	36	Woodstock	1853	One year in Pennsylvania Hospital		
Cate, H. J.	37	Woodstock	1848			
Carroll, O. A.	34	Castleton, Vermont	1853		Asst Surg. 56th reg't.	
Clark, Augustus F.	24	Harvard Univ. Med. Col.	1861		Asst Sur. 6th reg. cav.	
Chambers, Wm. B.	25	Albany Medical College	1858	In private practice	Asst Surg. 60th reg't.	
Chase, Nathan B.	47	Woodstock	1837			

Cochrane, A. H.	27	Albany Medical College.	1857	.....	.....	Promoted to Surgeon.
Cooper, John 26		University of Pennsylvania	1857	Spent 2 years in Hospital of Paris	Ass't Surg. 5th reg. cav.	
Cooper, John R. 34		College Phys. and Surgeons ....	.....	In Dutchess Co. Hospital 7 or 8 years	Ass't Surg. 97th reg't.	
Cornish, Aaron 30		Castleton, Vermont.	1854	.....	.....	
Cutler, G. R. 21		College Phys. and Surgeons	1860	In N. Y. Hospital on surgical side	Ass't Surg. 57th reg't.	
Dean, Henry C. 23		Harvard Univ. Med. College	1861	.....	Ass't Surg. 84th reg't.	
Dewey, David B. 27		New York University	1858	In private practice 16 years	Ass't Surgeon Baker's California regiment.	
Dwinelle, Justin. 39		Jefferson Medical College.	1846	.....	.....	
Dodge, John L. 36		New York University	1845	6 months drug store; 6 months ship surg.; 6 months camp Cal.	Ass't Surg. 51st. reg't.	Promoted to Surgeon.
Doolittle, Frank W. 24		College Phys. and Surgeons	1860	Resident Surg. at Jews' Hospital; Resident Physician at Child's Hospital	Ass't Surg. 10th reg't.	
Douglas, George C. 27		Albany Medical College.	1857	In private practice	Ass't Surg. U. S. A.	
Downing, J. C. C. 23		Pennsylvania Medical College	1859	2 yrs. Surg. emigrant packet ship .....	.....	
Duane, Henry 31		Albany Medical College.	1861	.....	Ass't Surg. 18th reg't.	
Edmenston, Alex'r A. 25		Albany Medical College.	1853	Visited New York Hosp. in 1857 and 1858.	.....	
Elliott, Samuel R. 33		New York Medical College	1856	Externe Hospital, Paris, 1860, &c. ....	.....	
Elting, V. V. 29		Berkshire Medical College.	1851	Practiced 5 yrs. in Greene Co., balance in Hospital .....	.....	
Feldbausch, Phillip 26		Wurzburg .....	.....	Visited Hospital Wurzburg, Munich, Ber. lin, Paris, &c.	Ass't Surg. 45th reg't.	
Forrester, James Jr., ... 23		College Phys. and Surgeons	1858	Phys. Northern Dispensary, New York	Ass't Surg. 42d reg't.	
Fossard, George H. 23		Albany Medical College.	1859	In private practice 3 years	Ass't Sur. 8th reg. cav.	
Fuller, Winfield S. 30		College Phys. and Surgeons	1861	.....	Ass't Sur. 4th reg. cav.	
Franklin, Morris J. 37		New York University	1858	Visitor at Bellev. and N. Y. Hosp. 3 years.	Ass't Surg. 35th reg't.	
French, Seth 33		Castleton, Vermont.	1847	In priv. prac.; in Hosp. Sacramento City.	Surgeon 60th regiment	
Gale, James L. 26		University of Pennsylvania	1853	In priv. practice 9 years.	Ass't Surg. 38th reg't.	
Gesner, Brower 39		New York Medical College	1856	Served one year in South Carolina.	Ass't Surg. 63d reg't.	
Gilligan, Michael G. 21		Cleveland Medical College.	1851	In priv. prac.; atten'd Hos. Dublin & N. Y.	.....	Dismissed.
Goedrich, B. F. 37		New York Medical College	1861	.....	.....	
Gradendorff, Herman .. 27		Berkebiro Medical College.	1854	In private practice .....	.....	
Grimes, F. S. 33		New York University	1858	Assist. Ward's Island Hosp. one year.	Ass't Surg. 38th reg't.	Taken pris. at Bull Run Died at Charleston, typ'd sev. Nov. 1861.
Griawold, Stephen 29		New York Medical College	1850	.....	Ass't Surg. 36th reg't.	
Hadden, James. 36		Albany Medical College.	1861	.....	Ass't Surg. 50th reg't.	
Hall, William H. 25		Albany Medical College.	1856	In private practice	Capt. 22d regiment	
Haynes, Jonathan K. 41		Albany Medical College.	1857	In private practice .....	.....	
Hewett, Charles N. 61		Dartmouth Medical College.	1847	In private practice .....	.....	
Holden, Austin W. 29		Dartmouth Medical College.	1825	.....	.....	

ASSISTANT SURGEONS.—Continued.

NAME.	Age	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Humphreys, Patrick H.	26	New York University	1861	Attending physician in Williamsburg Disp.	Asst Surg. 48th reg't.	
Ingersoll, H. H.	27	Yale College Med. Dept.	1860	In general practice	Asst Surg. 48th reg't.	
Isam, Nelson	30	Yale College Med. Dept.	1868	Phys. Herkimer Co. poor house 6 years.	Asst Surg. 7th reg't.	Resigned.
Jack, Gustaf.	39	Baie	1854	Attended Hospital at Baie, &c.	Asst Surg. 7th reg't.	
Johnson, William E.	28	Albany Medical College	1859	In private practice		
Kayser, D. S.	36	Castleton, Vermont.	1849	In private practice		
Kidder, Walter.	38	Berkshire Medical College.	1845	In private practice		
Kilmer, Washington	33	Albany Medical College.	1860	1 yr. as Asst at Alms House Hospital.	Asst Surg. 90th reg't.	Resigned.
Kings, William B.	46	Berkshire Medical College.	1855	In general practice	Asst Surg. 3d bat-	Resigned.
Kipp, Charles J.	23	College Phys. and Surgeons	1861	Asst Surg. 5th Reg. N. Y. S. M. 3 mos.	calion.	
Kracuten, John.	28	Marburg, Wernburg and Vienna	1860			
Lakeman, William H.	25	St. Thomas Med. and Surgical College, London.	1857	Hospital steward.	13th regiment	
London, Douglas S.	35	Albany Medical College.	1851		Asst Surg. 104th reg't	
Lawyer, Thomas.	30	Albany Medical College.	1851	In private practice.	Asst Surg. 43d reg't.	
Leighton, Nathan I W.	28	New York Medical College.	1858	One year Kings Co. Hospital.	Asst Surg. 72d reg't.	
Lewis, John B.	29	New York Medical College.	1853	In private practice.		
Little, George W.	25	Albany Medical College.	1858	6 months Albany City Hospital.		
Long, Alfred J.	36	New York University	1853	In private practice 8 years.		
MacKay, David.	26	Glasgow, Scotland.	1856			
Madill, William A.	27	Albany Medical College.	1858	Asst Surg. Pennsylvania Hospital 6 months.		
Mann, William B.	23	Buffalo University.	1861	Physician and Surgeon Alms House.	Asst Surg. 23d reg't.	
Marshall, Benjamin.	30	College Phys. and Surgeons	1852	N. Y. Disp. 4 years; N. Y. Eye and Ear Infirmary 2 years.		
Marshall, E. O.	23	College Phys. and Surgeons	1861	Assistant Physician Randall's Island Hosp.		
Macfarlane, Carrington	25	College Phys. and Surgeons	1861	Hospital	Asst Surg. 81d reg't.	
McAllister, Thomas.	33	College Phys. and Surgeons	1853	N. Y. City and Bellevue Hospital.		Promoted to Surgeon.
McLinton, F. M.	41	Harvard University.	1822	In private practice 13 years	Asst Surg. Mar. Artill.	
McLennan, John J.	40	Harvard University.	1847	In private practice		Promoted to Surgeon.
McKin, Robert V.	21	New York Medical College	1861		Asst Surg. 57th reg't.	
McKee, J. O.	27	Albany Medical College.	1859	Albany Hospital.		
Mead, Martin L.	34	Albany Medical College.	1859	In private practice.		
Mober, Louis.	27	New York Medical College	1857			

ASSISTANT SURGEONS.—Continued.

NAME.	Age.	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Bweeney, James	25	Albany Medical College	1860	Albany City Hospital 1 term.	Captain 96th regiment.	
Severin, A.	31	Honburg	1840	2 years practice in Hamburg; 5 in N. Y.		
Shaubart, David Reil	39	College Surgeons, England.	1846	Attended St. Vincent's Hospital.	Surg. 63d reg't.	Dismissed.
Skilton, Julius A.	28	Albany Medical College	1853	In private practice.	Ass't Surg. 30th reg't.	Prom. to Sur. 87th reg.
Smith, J. E.	28	College Phys. and Surgeons	1844	2 years charge Wayne Co. Hospital.		
Smith, Joseph H.	39	Albany Medical College	1846			
Spaulding, Ebridge G.	26	College Phys. and Surgeons	1850		Ass't Surg. 94th reg't.	
Spencer, John	38	Cleveland Medical College	1842	Marine Hospital at Cleveland 3 years.	Surgeon 9th cavalry.	
Spangue, H. M.	26	New York University	1860	One year New York City Hospital.		
Steiger, Joseph	29	Wurzburg	1839	Hospital practice Vienna and Prague, 1854-1859.		
Stein, Charles	38	Edingen	1839		Ass't Surg. 88th reg't.	
Steinert, George	29	New York University	1857			
Stevens, George T.	28	Castleton, Vermont	1857		Ass't Surg. 77th reg't.	
Streeter, Rud G.	29	Castleton, Vermont	1853			
Tanner, William H.	24	Vermont Medical College	1860	In private practice.	Ass't Surg. 47th reg't.	
Thomas, Robert	36	Switzerland	1860	Practised in Hospital of Paris.	Ass't Surg. 41st reg't.	
Tinsot, Max	29	Bern, Switzerland	1860			
Todd, George B.	30	Albany Medical College	1856	1½ years at Mobile Hospital, Alabama.	Ass't Surg. 12th reg't.	
Tomphins, Hartwell C.	33	Wendstock	1853	8 mo's Island Hospital; 6 mo's New York Hospital.	Ass't Surg. 61st reg't.	
Town, Francis L.	25	Hanover School, N. H.	1859		Ass't Surg. U. S. A.	
Trenor, John, Jr.	20	College Phys. and Surgeons	1856			
Tutbill, Robert K.	26	New York Medical College	1859		Ass't Surg. 80th reg't.	
Uhlins, Stephen F.	37	Castleton, Vermont	1851		Ass't Surg. 95th reg't.	
Usher, A.	42	College Phys. and Surgeons	1847			
Valentine, S. B.	29	Albany Medical College	1855	In active practice.		
Van Rensselaer, J. J.	25	Albany Medical College	1859	Assistant at Albany Hospital one year.	Ass't Surg. 3d reg't.	
Van Steensburg, Wm.	29	University of Vermont	1856	In private practice.	Ass't Surg. 1st reg't.	
Van Vleet, D. P.	46	Albany Medical College	1842	In private practice.		
Van Vorst, G. W.	24	College Phys. and Surgeons	1861			
Van Vorst, G. H.	30	Albany Medical College	1855	In practice 6 years.	Ass't Surg. 95th reg't.	
Van Vorst, Benj. F.	24	Albany Medical College	1859	In practice 3 years.		
Wallace, Theodore C.	22	General Medical College	1859	In practice 7 years; ship surgeon 2 years.	Ass't Surg. 93d reg't.	
Wells, Abraham	35	University Pennsylvania	1853			

Werner, Edward.....	36	Wurzburg.....	1850	In private practice.....	.....	.....
West, Joseph E.....	33	College Phys. and Surgeons.....	1852	Charge of hospital 16 months at Utica.....	.....	Ass't Surg. 14th reg't.
Whiton, H. B.....	34	Albany Medical College.....	1854	In private practice.....	.....	Ass't Surg. 2d reg't....
Whitehead, Ira C.	27	Berkshire Medical College.....	1855	.....	.....	.....
Whitford, Alfred H....	33	University Maryland.....	1856	In private practice 6 years.....	.....	Ass't Surg. 99th reg't, "Union Coast G'd."
Williams, Alfred A. C.	26	Berkshire Medical College.....	1857	Assist. Surgeon 1st Maine Militia 3 months	.....	Ass't Sur. 1st reg. artil.
Wisen, William H.....	51	Fairfield Medical College.....	1831	Regiment; ship surgeon.....	.....	Ass't Sur. 2d reg. artil.
				.....	.....	Prisoner.

Several of the Regiments were independent in their organizations, and were at once accepted for service by the General Government. The Surgeons were appointed by their Colonels, without an examination before the Medical Board. Already in the service of the government it was not easy to recall them for the examination, and they were subsequently commissioned by the State, as follows:

SURGEONS.

NAME.	Where graduated.	Year.	What service since graduation.	Where appointed.	What changes.
Barr, George W.				Surgeon 64th regiment	.....
Bacwicks, Henry F.				Surgeon 73d regiment	.....
Elliot, Frederick				Surgeon 1st Cavalry	Resigned.
Gray, Charles				Surgeon 11th regiment	.....
Hinchman, Richard H.				Surgeon 67th regiment	.....
Lewis, William C.				Surgeon 82d regiment	.....
Loughran, Robert				Surgeon 80th regiment	.....
McDonald, James E.				Surgeon 79th regiment	.....
O'borne, John Q.				Surgeon 42d regiment	.....
Petart, Felix				Surgeon 55th regiment	.....
Powell, Alfred				Surgeon 82d regiment	Prisoner at Bull Run.
Sturgeson, George B. F.				Surgeon 62d regiment	.....

ASSISTANT SURGEONS.

Adams, George	.....	.....	.....	Assistant Surgeon 67th regiment	.....
Arbhard, Theodore	.....	.....	.....	Assistant Surgeon 55th regiment	.....
Ash, James	.....	.....	.....	Assistant Surgeon 71st regiment	.....
Callahan, James T.	.....	.....	.....	Assistant Surgeon 74th regiment	.....
Fitch, James E.	.....	.....	.....	Assistant Surgeon 79th regiment	.....
Forshee, John M.	.....	.....	.....	Assistant Surgeon 11th regiment	.....
Ferguson, James F.	.....	.....	.....	Assistant Surgeon 82d regiment	Ellsworth Fire Zouaves. (role.)
McLeslie, Andrew	.....	.....	.....	Assistant Surgeon 70th regiment	Prisoner at Bull Run. (On pa-
McDonald, William	.....	.....	.....	Assistant Surgeon 64th regiment	role.)
Blacks, Rudolph	.....	.....	.....	Assistant Surgeon 30th regiment	Prisoner at Bull Run. (Pa-
Biggway, Frank	.....	.....	.....	Assistant Surgeon 73d regiment	role.)

As these pages are going through the press I gain the opportunity to add, that when in the month of April a great battle was anticipated at Yorktown, Virginia, where General McClellan was besieging the Confederate army, it was found that the medical and surgical force of the army was insufficient to meet the demands that such an engagement was likely to impose upon it. In order, therefore, to give immediate care to the wounded, under the authority of the Secretary of War, the governors of the several loyal States were directed to appoint a CORPS OF VOLUNTEER SURGEONS, who should respond to the call of the Governor and serve without remuneration. The following appointments have been made by the Governor of the State of New York up to this date, June 11, 1862.

LIST OF VOLUNTEER SURGEONS APPOINTED.

Name.	Residence.	Date of ommission n.
James R. Wood	New York city	April 7
Alfred C. Post	do	do
Ernest Krackowizer	do	do
Stephen Smith	do	do
Charles D. Smith	do	do
George A. Peters	do	do
John O. Stone	do	do
Thaddeus M. Halstead	do	do
Willard Parker	do	do
Gurdon Buck	do	do
Lothar Voss	do	do
Thomas M. Markoe	do	do
Alden March	Albany	do
John Swinburne	do	do
Edward H. Parker	Poughkeepsie	do
Charles Winne	Buffalo	do
William Detmold	New York city	do
Mason F. Cogswell	Albany	April 16
Samuel G. Wolcott	Utica	do
Sanford B. Hunt	Buffalo	do
Lewis Post	Lodi, Seneca Co.	do
Jonathan Kneeland	South Onondaga	April 17
John J. Crane	New York city	do
George Cochrane	Brooklyn	do
E. W. Alba	Angelica, Allegany Co.	April 16
Gilson A. Dayton	Mexico, Oswego Co.	April 17
S. Oakley Vanderpoel	Albany	do
Daniel E. Kissam	Brooklyn	April 17

Names.	Residence.	Date of Commission.
Cornelius Olcott.....	Brooklyn	April 17
Daniel Ayres.....	do	do
David L. Rogers.....	New York city	do
William H. Thompson.....	do	do
Charles Skinner	Malone, Franklin Co.	April 19
F. Burdick	Johnstown, Fulton Co....	May 15
Smith Ely	Newburgh	do
James V. Kendall.....	Baldwinsville.....	May 16
John V. Lansing.....	Albany	May 19
Sylvester D. Willard.....	do	do
William S. Denniston.....	Newburgh	June 9
Benjamin E. Bushnell.....	Little Falls	June 7
W. Blaisdell	Coeymans.....	12

FORTRESS MONROE AND WHITE HOUSE HOSPITAL.

Yorktown was evacuated on the 4th of May, and the battle at Williamsburg was fought on the 5th and 6th instant.

Dr. John Swinburne of this city, and myself left under the direction of the Surgeon General for Fortress Monroe, on the 8th inst., with orders to report to the medical director, Dr. J. M. Cuyler. We rounded Old Point Comfort after a delightful sail down the Chesapeake, on Saturday morning the 10th inst. Here everything began to have the aspects of war. A large number of vessels of war and transports were lying off the Point. The guns from every point frowned from the massive walls of the Fortress. The rebel flag could be seen at Sewall's Point, and beyond nearly as far as the eye could reach lay the terror to our fleet, the iron clad Merrimac. The Monitor, its antagonist, lay at a little distance from the landing, and would scarcely have gained attention except as she was pointed out to us. On reaching the shore we were escorted to the office of the Provost Marshal, where, although we were both opposed to swearing generally, we swore allegiance to our country with unquestionable earnestness.

Immediately we went to report to Dr. Cuyler, whom we found in a ward of the hospital. He gave us a cordial reception, saying: "You are just the men we want to see, take off your coats and go directly to work here." A large room full of wounded men were before us. Three hundred had arrived the evening previous, by boat, from Williamsburg, where they were wounded on the day of the battle, and had received only field dressing. They had been brought a mile or two to the boat, some of them

having lain on the field over night, then removed from the boat, and brought to the hospital. Thus, it was four days since some of the wounds had been dressed, and the patients were suffering from exhaustion. As soon as we could procure sponges, basins, water, lint, bandages, straps, &c., we went to work, and hard work it was to bend for hours over the beds of those poor fellows. There were many cases of field amputations, and most of them were good operations. There was, however, a tendency to gangrene, and some of the wounds became fatally gangrenous. There were gunshot wounds of almost every variety, a record of which would be interesting, but there was no time for making it. Many of the patients in the ward assigned to Dr. Swinburne and myself were of the Fifth North Carolina and a Virginia regiment, together with Massachusetts, New York and Michigan regiments. In the wards of the hospital they lay side by side, as amiable towards each other as if they had never been combatants, receiving alike all that care and skill could bestow. There were in our ward seven fractured femurs, occasioned by bullets. The minie ball shatters the femur fearfully, breaking it into splinters of from one to six inches in length, the results of which are likely to prove fatal. These cases ought to be brought off from the field and to the hospital on stretchers, with simple extension to keep the limb straight. Felt splints and bandages, when applied, become tightened by the swelling of the limb, and when the dressings are deferred for two or three days, they are exceedingly painful and productive of great mischief. We had arrived at the hospital at a favorable time for hard work, and we strove to perform it in behalf of our patients, in justice to our profession, and to the State of New York, which we represented. The surgeon in charge of the general hospital was our friend Dr. Reed B. Bontecou, Brigade Surgeon in General Wool's Division, formerly of Troy, to whom we were indebted for hospitality and for many kind attentions. The hospital was a part of the Hygeia Hotel, formerly a fashionable Southern resort, a sort of Southern Saratoga, built to accommodate twelve hundred guests, where the gay and the happy resorted, to breath the invigorating air from the ocean. It was a sad thought, that where only cheerful voices once mingled, the groans of the wounded and the dying now burdened the air. The roses in the court-yard which once emitted sweet perfume, now seemed sickly, unattractive, and exhaling only the odor of pus and suppurating wounds. There

were said to be at the Hygeia about five hundred patients. It was the nearest hospital to the landing, and consequently many of the worst cases were taken off here. After working almost without intermission on Saturday, Sunday and Monday, we found two platform car loads of wounded just arrived. They were laid on the piazza and in the yard, in the rear of the hotel, where their wounds were dressed. Every place seemed covered. They were immediately sent on a transport North.

The capital operations that occurred during our stay were four cases of resection of the shoulder joint, three amputations of the thigh, one amputation by disarticulation at the knee joint, two cases of resection at the elbow, and ten cases of exsection of the femur, eight of which were performed by Dr. Bontecou, and two by Dr. Swinburne. Dr. Bontecou is a graceful and accomplished operator, and must be ranked among the first American surgeons. The result of many of the cases of exsection of the femur were unsuccessful, though not under circumstances that ought to weigh against the operation entirely. The muscles in these cases were greatly torn, and destroyed by the force of the falls; the patients were already exhausted, and the air of the over-crowded wards had become so pus poisoned, that a well man could scarcely have lived a week in them, and it necessitated the vacating of some of them entirely. This was the case of the Reading Room ward of which we had the charge. There were at this hospital, as assistants to Dr. Bontecou, Dr. Van Steenberg, of the First regiment, and Dr. Forshee, of the Eleventh regiment; Brigade Surgeon Shipman, and Dr. Light. One mile west was the Mill Creek Hospital, a large government storehouse, with about three hundred beds, all of which were occupied, under the charge of Brigade Surgeon Hunt. Here Dr. McLean, of the New York Second, and Dr. Whiton, assistant, were stationed. Drs. Brinsmade, of Troy; Alden and Henry March; Lente,* of Cold Spring, and others, were doing volunteer service at this hospital. One mile still further west was the Chesapeake Hospital, a large building formerly known as the Chesapeake Female Seminary. It was under the charge of Dr. McCay, Brigade Surgeon. Drs. Edward H. Parker, Stephen Smith, Husted, and A. C. Post were on service there. I saw Dr. Post apply a ligature to the primitive carotid. He mentions the operation in a letter to the American Medical Times, of June 7. In this

* See description of Dr. Lente, *Am. Med. Times*, June 14.

establishment there were said to be seven hundred beds, making fifteen hundred wounded and sick at Old Point Comfort. There were many sad, sad scenes in the hospitals. Among the faithful laborers at the Hygeia was the Chaplain of the United States ship Chesapeake, and Mr. Barclay, a christian philanthropist from Philadelphia, who was unremitting in his attentions to the sick, procuring for them all that money could purchase, and encouraging them by words and acts of kindness.

Drs. Cogswell and Lansing of Albany arrived at Fortress Monroe on Saturday the 17th, when we all received orders from Dr. Cuyler to report to Dr. Tripler, the medical director of the Army of the Potomac, at its headquarters. We reached Yorktown on Saturday evening, and for want of a pilot remained there until morning, having time to make a hurried survey of the place, but not to visit the hospitals, which were under the charge of Dr. Greenleaf. There were fifteen hundred sick in the hospitals at Yorktown.

It was a delightful sail up the Pamunkey river. There was a stillness becoming the Sabbath morning, the clouds were so beautifully reflected in the river that one might question whether he was sailing through the sky or the water. On the banks of the river all was quiet, and except in few places where "contrabands" gathered about their cabins, they appeared deserted. At West Point we had taken on board a "secesh" pilot, without any special guarantee that our steamer would be safe in his hands. We passed safely the vessels that had been sunk in the river to obstruct navigation, and a little past meridian approached Cumberland, where we found the rear of the army. White House, which is the head of navigation on the Pamunkey river, was several miles beyond, and to this place the river was literally crowded with steamers and transports of every description. It is estimated that there could not have been less than ten thousand vessels, steamers and transports. General McClellan and the advance of the army were at this place. One can only be impressed with the magnitude of an army by actually seeing it and being in its commotion. We found our way to the medical director's whose tent was near General McClellan's, and presented our credentials, with the assurance that we were ready for any service. After a little hesitation we were informed that he had nothing for us to do, and the order for our transportation to

Fortress Monroe was accordingly furnished. We spent the afternoon on the field, meeting at almost every point some familiar face. The evening dress parade of the army excited our admiration as the air echoed with the music of a hundred bands. As far as the eye could reach the field was covered with men, and tents, horses, mules, and army wagons. Towards evening the army received orders to move forward at 4 o'clock the next (Monday, May 19,) morning. When we arrived at the steamer in the evening, preparatory to our return, we found a message from Dr. Tripler, requesting us to report to him the next morning at seven o'clock. This we did. He informed us that he had determined to organize a field hospital at that place, and to send back the sick and disabled of the army there for treatment. He requested us to establish this hospital, of which Brigade Surgeon J. H. Baxter was to remain as director. About three hundred sick had been left on the ground. The hospital was to be composed of one hundred tents erected in double line on an oblong square, to accommodate twelve hundred patients or twelve in each tent. Two companies from the New York 93d and one from the 106th Pennsylvania were detailed for the labor under our supervision. There was a delay in obtaining spades and axes; nothing could be done without them. It began to rain early in the afternoon, and the sick men were picked from the road side as fast as tents were erected to shelter them, others gathered under the trees until tents were ready. Night came and there was neither straw or any food. These poor sick and tired fellows laid down on the ground like brave men, without straw or food, and without a word of complaint. On Tuesday ambulances arrived with the sick faster than we were able to dispose of them. The straw that we obtained was wet and musty. There was yet no means for getting water, or beef, or kettles, or wood, and the thousand other things that pertained to the necessities of a hospital, and when night came again we all laid down on the ground in our tents, tired and hungry, and full of sympathy for the sufferings we could not relieve. On Wednesday the army supplies began to come in. The sanitary commission arrived and furnished us with beef, straw, beds, pillows, shirts and towels; while camp kettles, medical stores, coffee, rice and sugar were furnished from the army department. An arrangement was made for the transportation of wood and water; system and comfort began to come out of confusion and want. To Dr. Cogswell was assigned the laborious

duties of the office, and the superintendence of the hospital records, while to Drs. Swinburne, Lansing and myself, of Albany, Drs. Page and Hall, of Boston, was entrusted the reception and the treatment of the patients.

On Thursday a tremendous rain flooded the ground and some of the tents, so that many of the sick lay in the water. This was bad enough, but the men were brave and uncomplaining. Hay was brought after the rain, to raise them above the wet, and the surgeons waded through mud nearly to the top of their boots to see that the hay was well distributed, and to look after the sick. Immediate measures were then taken to floor the tents with plank, six inches above the ground, and to increase the drains around them. The Sanitary Commission did excellent service, and provided for the immediate wants of the sick, before the government resources could be obtained. They had the steamers Spaulding, Elm City and Daniel Webster, on which they received about four or five hundred of the most severe cases from the hospital during the first week. There were received at this field hospital during the first week about seventeen hundred patients. Many of them suffered in their re-transportation from the hospital to the steamers, and doubtless the mortality was increased by the removal of exhausted fever patients. When the wagons and ambulances reached the hospital at night, there was no alternative but to leave the patients in them until morning before beds could be provided for them. Perhaps many convalesced by the time they reached New York who would have been ready to join their regiments had they remained. Dr. Kneeland arrived during the week and labored hard and acceptably in hurrying the preparation of provisions for the patients. The culinary department was crude, and needed constant surveillance to make it run well. The patients necessarily suffered for food for the first few days. But the mortality was not large. During the first week there were only four deaths at the hospital, out of the seventeen hundred. Eight occurred on board the sanitary vessels, possibly some of these might have been avoided if their removal could have been prevented. I have not the statistics of sickness of the whole hospital, but those of two hundred and thirty-four patients for which I prescribed in the morning of May 24th, from which my report was furnished, they may be taken nearly as an index to the whole, and are as follows:

Two Hundred and Thirty-four Patients Visited and Prescribed for on the morning of the 24th of May, were as follows.

Debility	94
Fever	45
Diarrhœa	49
Rheumatism	16
Dysentery	6
Lame and wounded	8
Measles	3
Ruptured	3
Parotitis	1
Venereal	1
Pneumonia	1
Eruptive	3
Injured sight	1
Neuralgia	1
Spermatorrhœa	1
Sore throat	1

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Many of these cases would be able to return to duty in ten days. They were tired and exhausted; they needed **REST** and **NOURISHMENT**. The worst cases of fever, both remittent and typhoid, were sent to the vessels of the Sanitary Commission. Could they have been as well nourished at the hospital, they would have gained nothing by removal. The diarrhœas were not unusually obstinate, nor the dysentery severe, and but few of the cases of rheumatism were acute. The stimulus and tonic consisted of quinine and whisky, and were essential in the treatment of nearly every case. Suitable nourishment for the sick would have frequently answered better, but that could not be obtained. The resources of the government were large, but it required several days to concentrate them for the care of so many hundred sick. The zeal and energy of the Sanitary Commission, their timely aid at this hospital, the heart with which they came to the work, the willingness of their medical corps, rise above the praise which words can express. Such, in few words, was the organization of the hospital at Whitehouse, twenty-three miles from Richmond, and the part which those

who represented the State of New York bore in it. It was a great labor, and faithfully performed.

The situation which Dr. Tripler chose for the location of the hospital, on low spongy ground, has been severely criticised, and the conduct of General McClellan as severely censured for guarding the house of the rebel Colonel Lee (because it was the place where Washington first met his wife, Mrs. Custis,) instead of allowing it to be used for a hospital. I went through the house. It would not have contained fifty beds, and the lawn was not large enough for so many tents. The river was on one side of it and the road on the other. The miasm from the river and the noise from the road would have been two objections against using the lawn. A more desirable location might have been obtained on a slight elevation at a considerable distance south of Colonel Lee's house, where water would have been more easily available from the river, and the ground more easily surface drained, but Colonel Lee's house would have furnished no desirable addition to a hospital unless used for the headquarters of the surgeons or officers who might be sick. In the present case it was too far distant for the former purpose.

On Sunday the 25th of May, a delegation of twenty-four surgeons arrived from Massachusetts, and engaged with Dr. Tripler for service. Twelve were retained at the White House hospital and twelve sent back to Yorktown.

Circumstances obliged Dr. Cogswell and myself, though not without many regrets, to start on our journey homeward on the 26th instant, while Drs. Swinburne and Lansing went on and were at Savage's Station in time to receive hundreds of the wounded at the terrible battle of Fair Oaks, near Richmond, which occurred a few days afterward.

There are many physicians who have recently gone to do volunteer service, and the many who in various ways are connected with the labors of the sanitary commission, whose names and an account of whose services cannot at the present time be obtained.

June 12, 1862.

Article 30. Report of the Special Committee upon the United States Drug Law.

To the Medical Society of the State of New York:

At the last meeting of the Society the following preamble and resolution were adopted: [See published Transactions of 1861, page 358.]

Whereas, All the incorporated medical and pharmaceutical bodies of the collection district of the port of New York, have, through a joint committee, proposed to take some decided action in order, if possible, to secure the proper execution, by the incoming Federal Administration, of the United States law "to prevent the importation of adulterated and spurious drugs and medicines;" and

Whereas, This joint committee has, through its representative Dr. James M. Minor, acting as a sub-committee, requested the co-operation of this Society; therefore

Resolved, That this Society fully recognizes the importance and propriety of this action, and cordially responds to the movement; and that the President be authorized to appoint a committee of three to be associated in the above mentioned joint committee, to represent this body therein, with power to use the name and authority of this Society in furtherance of any measures that may be devised in the joint committee to effect the important object of its labors.

The committee appointed by the president consists of Drs. Frank H. Hamilton, John H. Griscom and Edward R. Squibb.

In the absence of Dr. Hamilton, chairman of this committee, who is now serving as a brigade surgeon in the army, the undersigned assumes the duty of offering the following report on behalf of the committee:

REPORT OF A JOINT COMMITTEE UPON THE UNITED STATES DRUG LAW, TO THE BODIES REPRESENTED IN THE COMMITTEE.

The joint committee upon the United States drug law begs leave to report, through the special committees of which it is composed, that this joint committee is constituted of five special committees, as follows:

One from the Medical Society of the State of New York, consisting of Drs. Frank H. Hamilton, John H. Griscom, and Edward R. Squibb.

One from the Kings County Medical Society, consisting of Drs. James M. Minor, T. M. Ingraham, and Joseph C. Hutchison.

One from the New York County Medical Society, consisting of Drs. Joseph M. Smith, Alfred C. Post, and Samuel R. Percy.

One from the New York Academy of Medicine, consisting of Drs. Stephen Smith, Henry D. Bulkley, and B. W. McCready.

And one from the New York College of Pharmacy, consisting of Messrs. John Meakim, John Milhau, and John D. Dix.

That these committees met soon after their appointment and organized in joint committee by the appointment of Dr. Joseph M. Smith as Chairman, and Dr. Stephen Smith as Secretary ;

That the joint committee thus organized held four meetings all except one of which were well attended, and all were characterized by earnest and deliberative action ;

That the committee early decided upon the plan of memorializing the President of the United States and Secretary of the Treasury asking for a thorough execution of the law, pointing out the difficulties which tend to prevent its being thoroughly executed, and suggesting a method whereby the principal difficulty might be, in a great measure, overcome. The following memorial was prepared, and a number of copies beside the original one, were printed for circulation in other cities, and for the use of the committee :

To His Excellency ABRAHAM LINCOLN,

President of the United States:

The undersigned presiding officers of the New York State Medical Society ; the New York County Medical Society ; the Kings County Medical Society ; the New York Academy of Medicine ; and the New York College of Pharmacy, beg leave to represent :

That, by discussion in these several bodies, by committees of conference, and finally by a joint committee, these bodies are unanimously agreed to solicit your attention to the proper execution of the law known as the United States drug law, passed by Congress in 1848, " to prevent the importation of adulterated and spurious drugs and medicines."

This law, if thoroughly executed, is a great public safeguard and benefit ; but if administered through venality, incompetency

or carelessness, it becomes mischievous, and may increase the evils it aims to correct. Its execution in accordance with its true intent and spirit demands the highest order of integrity, and a high standard of scientific and practical knowledge of medicine, pharmacy and chemistry, as applied to the quality and value of drugs and chemicals. In view therefore of the importance of selecting officers thus properly qualified, and the difficulty of deciding as to these qualifications without a critical examination, we respectfully recommend :

1st. That the candidates be graduates of a regular medical college, or a college of pharmacy ; and

2d. The reference of all candidates to the medical boards of examination of the army or navy, whose competency for such duty is well established, who shall report their decisions or selections to the appointing power through their respective departments. It will be remembered that these boards meet for the examination of candidates for the medical corps of the army and navy every year, generally in March, and always in some of the large ports of entry.

We are very respectfully

Your obedient servants.

The signatures of the presiding officers and the seals of the societies represented in this committee were obtained to the original memorial, and it was then transmitted to the Secretary of the Treasury by the hands of Dr. E. R. Squibb, enclosed in the following communication from the Chairman of the committee :

NEW YORK, *March 19th*, 1861. .

TO the HON. SALMON P. CHASE,

Secretary of the Treasury of the United States:

Sir—A due sense of the importance of the United States law “to prevent the importation of adulterated and spurious drugs and medicines,” and an absolute knowledge that the law is badly administered, have induced the following legally organized medical bodies, namely: the New York State Medical Society, New York County Medical Society, Kings County Medical Society, New York Academy of Medicine, and New York College of Pharmacy, to assemble by a joint committee to ask for some reformation in the execution of the law under the new Federal Administration. The action of this joint committee has been earnest and deliberative, and as Chairman of the committee I am directed to

acquaint you with these facts, and to present to you the enclosed memorial as the matured results of its labors.

Dr. Edward R. Squibb, of Brooklyn, N. Y., is directed by the committee to place these papers in your hands, and to offer you any explanations and information in the possession of this committee that may be desired by you upon the subject of the memorial.

Very respectfully your obedient servant,
(Signed,) JOSEPH M. SMITH,
Chairman of the Joint Committee.

As soon as the memorial was printed, copies were, by direction of the committee, sent to prominent societies and medical men, and to the colleges of pharmacy of Boston, Philadelphia, Baltimore and Chicago, with invitations to these bodies to co-operate in this effort for the better execution of the law, and replies were received from all the cities except Chicago, stating that prompt action would be taken by some of the bodies addressed.

Another memorial, altered in form so as to adapt it to general use, was then printed, and many copies of this were sent to the above mentioned cities, and to Louisville, Ky., for general signature, but with what effect the committee is not yet informed. This second memorial is as follows :

To the Hon. SALMON P. CHASE,
Secretary of the Treasury of the United States:

The undersigned representatives of the medical and public interests of their respective localities and organizations, respectfully ask from your administration of the Treasury Department, a more thorough execution of the law passed by Congress in 1848, "to prevent the importation of adulterated and spurious drugs and medicines."

When properly executed this law is a great public benefit, but if administered through venality, incompetency or carelessness, it becomes mischievous, and may increase the evils it aims to correct. Its efficient operation meets with strong opposition from the pecuniary interests of some influential commercial classes in each port where it is applied, and the officers under the law are some times sought for through other interests than its true aim and intention.

The value of this law to the medical and pharmaceutical professors, and to the public, depends almost entirely upon the offi-

cers appointed to carry it into effect. A proper and judicious execution of the intent and spirit of its provisions demands officers whose first requisite is the highest order of integrity; next, such officers require an amount of scientific and practical knowledge of medicine, pharmacy and chemistry, as applied to the quality and value of drugs and chemicals, that is rarely to be met with, and is never found without the exercise of care and discrimination.

In view of these requisites and the difficulties they must present to the appointing power in making selections from the numerous candidates always presented, we respectfully suggest that the medical board of examination of the army or navy would be competent and easily accessible to decide by critical examination upon the character and competency of persons who may be candidates for these important offices, thus materially aiding the Secretary of the Treasury in the duty imposed upon him by the law, of appointing "suitably qualified persons as special examiners of drugs, medicines, chemicals, etc." These boards of examination are constituted by the General Government, of medical officers of the army and navy, and meet annually for the examination of candidates for the medical corps of the army and navy, generally in March, and always in some of the large ports of entry. They are composed of practical men of high scientific attainments, who are fully committed to the true interests of the General Government and of the law itself, who are removed as far as possible beyond the reach of any local or collateral interests, and who could, through their respective Departments, be made easily available for this important advisory duty without any change in the law, or any additional expense to the Government. If our recommendation would be adopted it would only be necessary to refer all candidates directly to these boards, and to appoint those only whom the boards might find to be "suitably qualified" for the offices.

We are, sir, very respectfully, your obedient servants.

Eleven copies of this memorial were forwarded to the Secretary of the Treasury by mail, on behalf of this committee, signed as follows:

One by the medical and surgical staff of Bellevue Hospital.

One by the medical and surgical staff of the New York Hospital.

One by the medical and surgical staff of the Brooklyn City Hospital, and the Brooklyn Medical and Surgical Society.

One by a portion of the staff of the Demilt Dispensary.

One by the president of the board of trustees of the Brooklyn City Hospital.

One by the president of the council and faculty of the Long Island College Hospital.

Two by the prominent pharmacutists of New York city.

One by Schieffelin Brothers & Co., druggists and importers.

One by Merrick and Bull, importers of drugs, James S. Aspinwall, druggist and importer, and Lazell, Marsh and Gardner, druggists and importers.

One by Joseph Horsey's Son, importer of English drugs.

Copies of the memorial were presented with an application for the signatures of three of the largest and best known firms of this city, who are exclusively engaged in the importation of drugs. One of these firms only, namely, Messrs. Merrick and Bull, of No. 44 Ceder street, signed the memorial. Both the others distinctly refused on the ground of objections, first to the law itself as being injurious to commerce, and next to the proposed plan of having it executed, although both the houses thus objecting had signed a paper recommending a particular broker in drugs to fill the office of special examiner at this port.

Signed by order of the committee,

STEPHEN SMITH, M. D., *Secretary.*

NEW YORK, *March*, 1861.

It now remains for the undersigned to report as briefly as possible what occurred in connection with the action of this joint committee subsequent to its adjournment.

Many of the memorials distributed by the committee were signed and sent to the Treasury Department from various parts of the country. In Boston the matter was taken up promptly with zeal and energy, and both the medical and pharmaceutical professions urged the reformation in the way proposed by the committee. The Philadelphia College of Pharmacy also took a prompt and decided action in the matter, and forwarded a memorial upon the subject although they did not like nor adopt the suggestions of the committee. In Baltimore, also, the subject was taken up and the result of their action was forwarded to the Treasury Department in conformity with the suggestions of the

committee. From Louisville, Ky., also, the suggestions of the committee were adopted, and memorials were sent to Washington.

The undersigned, as directed, went to the Treasury Department with the memorial of the committee, and although unable to see the Secretary did see the Assistant Secretary, and had a very satisfactory interview with him upon the subject. He was familiar with the whole subject from having been Assistant Secretary to Mr. Corwin at the time when the drug law was passed, and assured the committee, through the undersigned, that the whole of the papers and circumstances should be carefully brought to the notice of the Secretary at the proper time, and added that he knew the Secretary was fully aware of the importance of the offices under the law, and was determined that the law should be faithfully executed. From collateral circumstances as well as from these assurances, it appears that the subject did come before the Secretary in a strong and true light, and that there were not less than fifteen candidates for the single office in New York, and that most of these based their principal claims upon political grounds, and their hopes chiefly upon political and personal influence.

After some months had elapsed an appointment was made, and the officer appointed was found to be a money broker of Wall street, and that there were "strong political reasons" for his appointment.

Upon subsequent inquiry, with a view to ascertain the probable fate of the law when in the hands of a money broker of many years standing, it was, however, ascertained that the appointee was in early life a druggist, and that he had been connected in various ways with the drug market, through a bankruptcy, up to a period within seventeen or eighteen years of the time of appointment.

Notwithstanding this, however, it is believed by the undersigned, from personal observation, and this belief is concurred in, that there is some improvement in the administration of the office. Credit is therefore due to the officer here so long as he does the best he can, but not to the appointing power which alleges that "strong political reasons" were the grounds upon which the appointment here was made.

As a result, therefore, of probably one of the most zealous, unanimous, and general movements ever made by the medical and pharmaceutical bodies of this State at least, wherein only a gene-

ral principle of examining qualifications for a particular and important office strictly within the domain of these bodies, was respectfully but earnestly asked for, from a Department that repeatedly promised that qualification should be the first object of scrutiny in filling its offices, nothing whatever has been gained in either principle or practice, and the work undertaken remains unfinished for the present, at least.

Respectfully submitted by

EDWARD R. SQUIBB, M. D.

BROOKLYN, *February* 3, 1862.

Article 31. Report upon the United States Pharmacopœia.
February, 1862.

To the Medical Society of the State of New York:

The undersigned, representative of this body in the committee of revision, publication, and control of the United States Pharmacopœia begs leave to report :

That during the past year, and since the last report, the committee of the national convention upon the Pharmacopœia has continued to meet in Philadelphia every Wednesday evening except the first Wednesday of each month, until October, and since that time every Saturday evening, and that with few exceptions the undersigned has attended the meetings throughout the year.

Throughout nearly two years now, five members of this committee have diligently prosecuted the labor imposed upon them with unity of purpose and much harmony of action.

The systematic revision of the work was completed at the meeting of the 18th of January last, and the committee has since been engaged upon subjects that were deferred or postponed during the progress of the work. Of such business some part yet remains unfinished, and there are beside, some general features, such as weights and measures, tables, etc., to be discussed and acted upon. It is, however, confidently expected that within a few weeks now the work will be ready for editing. In the course of the editing a few more meetings may be necessary before the book is ready for the press, so that by the middle of the current year it may be ready for distribution.

In the revision many additions have been made to the *materia medica* lists, and much improvement has been made in the officinal definitions of important articles. For instance, opium, scammony, cinchona barks, etc., have now a definite value fixed for them as officinals, based upon a given percentage of their most active constituents. Many articles also have been dismissed from the lists, and a few promoted from the secondary to the primary list. The preparations, however, have demanded most time and attention, and their revision has been attended with most labor. Many changes have been made in the formulas and processes to render them as far as possible, simple, practical and easy, at the

same time that great care has been taken to avoid any departure from the strength and therapeutic value of established remedies. Many new preparations have been introduced, the processes for which were not only put in actual practice by sub-committees, but often verified by repetition in other hands where doubtful or difficult points were at issue.

Much care has been used to keep out preparations not yet sufficiently established by time and usage to entitle them to a place in the Pharmacopœia, and no insignificant portion of the time, attention and labor of the committee, have been given to novelties that were finally rejected as either inappropriate, unnecessary, or not sufficiently established, and it is believed that no important remedy of the last ten years escaped this trial and discussion. The action in cases of importance was not hurried but often deferred from time to time so long as information could be gathered and rendered available. Some preparations not usually or easily made, the processes for which gave no important information of their character, were transferred to the primary list of the *materia medica*, and were there protected or guarded as well as possible by appropriate notes of description and tests, and in some instances, such as that of chloroform, the commercial article was placed in the primary list as a material from which to obtain, by an appropriate process given among the preparations, the purer article that is alone proper for use in medicine.

A judicious selection of fluid extracts has been introduced, in all except two of which, each minim represents a grain of the drug from which they are made. The two exceptions are cinchona bark and wild cherry bark, and in these each minim represents half a grain, for reasons connected with the practical management of the processes of extraction and for the easier regulation of the doses. The fluid extracts have in almost all cases been kept simple and plain leaving all combinations and compounding to the extemporaneous use of them, because these complicated mixtures lead to confusion, routinism or polypharmacy.

When published, the undersigned ventures to hope that the profession generally will give to the work a close scrutiny and attention, and should it be found deserving, active adhesion and support.

Respectfully submitted by

EDWARD R. SQUIBB, M. D.

BROOKLYN, *February 3, 1862.*

Article 32. Report of a Special Committee upon the Communications remonstrating against Homœopathy, from the Oneida County Medical Society, and the New York Academy of Medicine.

To the Medical Society of the State of New York:

At the semi-annual meeting of the Oneida County Medical Society, held at Rome, January 14, 1862, the following preamble and resolution were unanimously adopted :

Whereas, Great exertions are now being made by circulating petitions throughout the country asking Congress to pass a law appointing homœopathic practitioners to the post of army surgeons ; therefore

Resolved, That a committee of three be appointed to memorialize the State Medical Society to take such measures as its wisdom might dictate to maintain the honor and position of the Medical profession, and also to express to our member in Congress the decided disapprobation of this society to such an unwise innovation.

The undersigned, having been appointed under the foregoing resolution, would respectfully present it as an expression of their own desire in the premises, and urge upon the State Medical Society the expediency of counteracting, as far as possible, any influences calculated to confer exclusive privileges upon any particular set of practitioners or allow exemption to any from the usual and regular ordeal and examination required previously to an appointment as surgeon in the army.

It would be a mark of supererogation in us to recount the varieties of empiricism connected with the homœopathic practice to so enlightened a body of physicians as compose the New York State Medical Society, and we would therefore conclude by submitting the subject without further remark.

Respectfully submitted,

N. H. DERING, M. D.,

D. G. THOMAS, M. D.,

C. L. HOGEBOM, M. D.,

Committee.

UTICA, N. Y., *January 25th*, 1862.

[Assem. No. 209.]

Upon motion of Dr. O. White, of New York, this communication was laid upon the table until the delegation from the New York Academy of Medicine could present one of a similar character with which that delegation was charged.

Subsequently the communication was taken from the table and the following one from the New York Academy of Medicine was read in connection with it:

NEW YORK, *January 31, 1862.*

J. P. GARRISH, M. D., *Chairman:*

Sir—The following matter is an extract from the minutes of a special meeting of the Academy, held January 29, 1862:

EXTRACT.

The following letter and resolutions from Dr. V. Mott were read:

Dr. JAMES ANDERSON,

President of the New York Academy of Medicine:

Sir—We have all been annoyed with the intimation that the noble surgical staff of our army might be polluted with homœopathy. We all honor the regular profession, and when an attempt is made to impair its usefulness or detract from its dignity, we should promptly and unitedly repel it. Influenced by these sentiments I forward to you the accompanying resolutions, and beg you to introduce them at the meeting this evening as coming from me. A broken metacarpal bone prevents my presenting them in person.

Yours truly,

VALENTINE MOTT.

1 GRAMERCY PLACE, *January 29, 1862.*

Whereas, Petitions have lately been presented to the Senate and House of Representatives of the United States for the employment of homœopaths as surgeons in the army; therefore

Resolved, That the New York Academy of Medicine deems it their duty in the interest of the army, respectfully to protest against the employment of such practitioners for the following reasons:

1st. That the practice, wherever subjected to accurate observation has failed to establish itself in any hospital.

2d. That in the countries where it originated and attained its fullest degrees of development it has not been introduced into the army or navy.

3d. That it is no more worthy of such introduction than other kindred methods of practice as closely allied to quackery.

4th. That such appointment would dissatisfy and dishearten the medical staff of the army, who understand the true character of homœopathy, and who have entered the service of their country with confidence that the government would strive to elevate the standard and promote the efficiency of the medical staff, results surely to be defeated by the appointment of homœopaths.

Resolved, That a copy of the above resolutions be sent to the Honorable Ira Harris, of the United States Senate, and the Honorable F. A. Conkling, of the House of Representatives, with a request that the resolutions be presented to the two Houses of Congress.

The resolutions were supported by Dr. Van Kleek, Dr. E. Harris, Dr. J. M. Smith, and Dr. Isaac Wood, and were then unanimously adopted.

On motion of Dr. John G. Adams, the delegates to the State Medical Society were instructed to bring the subject before that body at its meeting at Albany on Tuesday next.

J. H. HINTEN, M. D.,

Recording Secretary.

After the reading of the communications, upon motion of Dr. Cotes a committee of three was appointed to take them into consideration and report what action the society should take on the subject.

REPORT.

The special committee to which was referred the foregoing communications upon the subject of the introduction of homœopathy into the army begs leave to report :

That upon mature consideration your committee recommends that the society should earnestly endorse the object of these communications, and make known its desire to present a determined front in opposition not only to homœopathy but to all other irregularities in the medical practice of the army, especially at a time when the efficiency of the army and therefore the reliance of the country is so largely dependent upon the health and sanitary condition of the troops; and that the society holds itself in readiness at all times to act with energy whenever its action may be either necessary or useful, and that with this expression of sentiment the subject be allowed to lie over until further action becomes necessary.

Your committee believes there is no real danger that any influence can be brought to bear upon the General Government or Congress whereby any such dangerous, expensive, and revolutionary experiment might be tried, and with this reasonable belief the committee advises that all unnecessary action which could be construed into persecution of any sect or schism be carefully avoided, because such schisms generally grow into increased importance upon a sympathy which is unquestionably excited by an intemperate opposition from a successful superior power. It may be remembered that "the blood of the martyrs was the seed of the Church," and that in the history of our own generation the cry of "persecution" has been the invariable food upon which ultraism and follies of all kinds have grown up from Broussaisism down through the whole scale to the lowest step of clairvoyance.

That the Executive Department of the General Government is sound and has been successful in this matter, has been abundantly proved by your committee through the kindness of Dr. Charles A. Lee, of Peekskill. Dr. Lee happened to be in Washington at the time when Mr. Cameron, as Secretary of War, referred the petitions for the establishment of an homœopathic hospital to the Surgeon-General of the army for the action of that office, and the Surgeon General, at Dr. Lee's request, gave him a copy of the reply sent from that office to the Secretary of War, of which the following is a copy :

SURGEON GENERAL'S OFFICE, *December 11, 1861.*

Sir—In obedience to the request of the Secretary of War, who has referred to me the petition of a number of citizens desiring the establishment of a homœopathic hospital in this city for the treatment of the sick and wounded of the army, I respectfully state that no other measure could be devised which would so effectually destroy the respectability and efficiency of the medical staff of the army, and at the same time wound the pride, and weaken the confidence in the General Government, of the regular medical faculty, not only in this but in every other land where charlatanry is not permitted to usurp the position claimed, and in our own land occupied by science, sustained by reason and founded on experience. It is not true, as stated in that petition, that homœopathy has the confidence of every community. There may be individuals in every community sufficiently deluded to place confidence in some of the practitioners, it is well known, however,

that the intelligent and well educated of those practitioners have been graduates of so-termed allopathic institutions, and have repudiated their alma mater for filthy lucre. Their new system is a blind—a clap-trap; in all serious diseases they resort to the teachings of the regular schools.

The effect will be to produce throughout the land dissatisfaction, and a universal outburst of indignation from all medical societies and individuals.

The practical difficulty of carrying out the two systems in the army is so obvious and insuperable that it would be supererogatory in me to point it out.

I have not heard of a single call having been made, or a desire expressed for a homœopathic physician by any army patient.

The papers are herewith returned.

Respectfully submitted,

(Signed,)

C. A. FINLEY,

Surgeon General.

HON. SIMON CAMERON, *Secretary of War.*

Upon this reply of the Surgeon General the project of establishing any such hospital was abandoned.

If then the executive department is sound and invincible, and if its hands be well sustained by the moral force of the profession, there can be little danger from the only other source from which such disastrous disorganization could come, namely, from Congress. In the opinion of your committee it will always be found impossible to obtain a majority of either House of Congress which would recommend, much less establish, over the heads of the executive department, a system which in its details would create a confusion disastrous to every legitimate interest of the service for the mere purpose of gratifying the proclivities of a comparatively small sect or class of the general community.

In conclusion, your committee recommends that if the permission of Surgeon General Finley can be obtained for the publication of his letter quoted above, the Secretary of the society be directed to furnish copies of the action of the society upon this subject to the Oneida County Medical Society and the New York Academy of Medicine.

(Signed,)

L. B. COTES, M. D.,

W. P. TOWNSEND, M. D.,

E. R. SQUIBB, M. D.

The report of the committee was accepted and adopted.

SURGEON GENERAL'S OFFICE, }
WASHINGTON CITY, *February 13, 1862.* }

Dear Sir—I have the honor to acknowledge the receipt of your communication of the tenth instant, conveying the request of the committee in relation to certain remarks of mine on the subject of homœopathy, and to say that they are entirely at the disposal of the committee.

It is very pleasing to find my efforts sustained so promptly and efficiently by the action of the medical societies of New York.

The report you were so kind as to forward for the information of this bureau is returned herewith.

Respectfully your obedient servant,
(Signed,) C. A. FINLEY,
Surgeon General.

E. R. SQUIBB, M. D., 149 Furman street, Brooklyn, N. Y.

Article 33. Report of the Committee on Medical and Surgical Statistics.

Once more your committee would report as to the progress of the work intrusted to their care.

The blanks ordered for the past year have been properly consigned to certain individuals in the various counties, with the request to circulate them freely among the members of our profession. We are happy to remark that we have found a healthy and increasing interest manifested by the profession in many portions of the State in the present undertaking of securing reliable statistics in medicine and surgery; and although the number who preserve a complete record of their professional observations may be comparatively small, we can assure the society that it is not only constantly increasing but already sufficiently large to amply compensate for every effort that has been made to inaugurate and establish the present system of registration.

We are again compelled to apologize for the tardy issuing of the blanks for the present year, but the dependent position of this society on the patronage of the State, has rendered the exertions of your committee entirely powerless. It is to be hoped, however, that no one will permit his daily registrations to be interrupted on that account, as the blanks for 1861 can be used by simply changing the date.

The chairman of this committee would invite and urgently request every individual in this State who may have preserved a record of his medical and surgical observations or *any portion thereof*, either according to the plan adopted by this society or otherwise, to transmit the same to him on the 1st day of January, 1863, who will, after having arranged a statistical digest, deposit them with the Secretary of this society from whom they may be obtained on application. This general call is made to enable the committee to present their report at the next annual meeting, which will comprehend all of the statistical facts and observations which they have obtained during the five years which will then have elapsed since their labors commenced.

Hoping to receive a cordial response to this call from the various sections of the State, your committee would again ask the society to order, in connection with its Transactions, the usual number of blanks for distribution for next year.

J. G. ORTON,

Chairman of Committee.

BINGHAMTON, N. Y., *February 3, 1862.*

NOTICES OF DECEASED MEMBERS.

Article 34. Biographical Notice of EDSON CARR, M. D. By GEO. COOK, M. D., of Brigham Hall, Canandaigua, N. Y.

Dr. Edson Carr was born in Vershire, Orange county, Vt., October 29, 1801. He was a lineal descendant from Saunders Carr, who came to this country from Scotland in the early part of the eighteenth century, and settled in Salisbury, Conn. His mother, Mary Prescott, was a daughter of William Prescott, and on the mother's side, was related to Gen. Dearborn, of Boston.

Late in the year 1819 Dr. Carr became a resident of Ontario county, N. Y. A youth, of eighteen years of age, without other advantages than the limited education given by the common schools of New England, and his own good native abilities, he began life among strangers and in obscurity. Disdaining no honorable labor, he applied his hands to whatsoever they found to do. He taught common school, and was for some time clerk in a drug store. He studied medicine with Dr. Richard Wells, then a practicing physician in the village of Canandaigua, attended a course of lectures in Boston, and received his license to practice from the Medical Society of Ontario county, in May, 1826. Entering upon the practice of medicine and surgery, he met upon the threshold, the tardy welcome that awaits all new candidates for professional honor and distinction. Quietly surmounting the obstacles that lay in his pathway, carefully cultivating habits of reading, research and observation, he gradually won his way to public confidence and esteem. The honorary degree of M. D. was conferred upon him by the Medical College of Geneva, and in 1855 the same degree was awarded him by the Regents of the University of New York. For thirty-five years he was connected with the Medical Society of Ontario county. He was, several times, president of the society, and represented it in the State Medical Society, of which he was elected a permanent member in 1855.

Dr. Carr never ceased to be a student of medicine. His years of most extended practice at the bedside, were his best years of study. If the demand for his professional services occupied every hour of the day, the night brought a measure of quiet, in which he eagerly sought to add to his store of knowledge. In the earlier years of his practice, he gave much attention to anatomy. The many skilful dissections and preparations he then made were placed in the museum of the Medical College at Geneva, and subsequently removed to the Medical School at Ann Arbor, Mich. This collection alone, apart from all else, is an enduring record and monument of his persistent and successful labor.

He was an attentive observer of the symptoms of disease, and carefully traced the relations between them and the pathological change which they serve to indicate. He kept up with the literature of the profession, and never fell into routine thought or practice. Having thoroughly acquainted himself with the anatomical and physiological relations of the various parts of human organism, and observed the relative influence of pathological changes, he approached the bedside of his patients, in his mature years, with the devotion of a true and loyal physician, judiciously endeavoring to aid the life-force in its struggle with disease, never rudely usurping its place with heroic remedies.

With the members of the medical profession of Ontario county Dr. Carr has always held a high place. His sense of professional honor was keen, and while he advocated liberal and scientific progress, he abhorred, with his whole soul, all dissimulation and quackery. To the young men of the profession, he ever gave, not only words of encouragement, but acts of kindness and assistance.

Dr. Carr was not a frequent contributor to medical journals. In the New York Journal of Medicine, for November, 1846, may be found an article entitled "Cases of Encephaloid disease." He also wrote and published an article on diseases of the colon, and in the American Journal of the Medical Sciences, for October, 1842, was published a paper on the "Crepitant Rale," in which he gave an explanation of its cause. This explanation, I believe, has since been concurred in by our best authorities.

Dr. Carr was married in November, 1827, to Mary W., daughter of Thomas Beale, Esq., of Canandaigua. He became a member of the Congregational Church in May, 1826. His evenness of temper, his kindness of heart, his freedom from censoriousness

and detraction, his liberality and public spirit, his candor and honesty, his prudence and singleness of purpose, his considerate sympathy and care in the house of sickness, endeared him to the entire community in which he had so long lived and labored.

For the thirty-five years of his professional life, Dr. Carr enjoyed a remarkable degree of health. He has said that he had not known sickness till 1851, when he was prostrated by fever, contracted while attending the National Medical Convention in Charleston, S. C., of which he was a permanent member and regular attendant. It would seem that he never regained his full strength and vigor, though he resumed and continued the active discharge of his professional duties. The sudden death of his wife in the spring of 1861, greatly shocked and depressed him. In August last he suffered an attack of influenza, which proved unusually stubborn. Partially recovering, a relapse followed, exposure at night in making a professional visit, and he became so much prostrated as to occasion his friends some anxiety. Saturday morning, November 16th, he awoke under a partial paralysis. He was able to speak, retained his mental power, and for several days the symptoms did not preclude all hope of his recovery. But in the course of Sunday night, Nov. 24th, his symptoms became more threatening, he soon lost all power of speech and motion, and gradually continued to fail till Friday, Nov. 28th, when he quietly sank for his final rest.

His funeral was largely attended, and to the sermon preached on that occasion by Rev. O. E. Daggett, pastor of the Congregational Church, of Canandaigua, I am indebted for many of the facts given in this brief sketch. "It seems to me," says his pastor, "that there was as much to be commended with as little to be censured in the life and character of Dr. Carr, as we can expect to find in any one so long and so well tried, and made so public; and such, I believe, to be the general sentiment of this community. We cannot but pass upon him such a judgment as, we believe, he awaited in a higher sentence, 'well done good and faithful servant.'"

Article 35. Biographical Memoir of MERIT H. CASH, M. D., of Orange county. By SYLVESTER D. WILLARD, M. D., of Albany.

Merit H. Cash was born in the town of Wawayanda, in the county of Orange, in this State, on the 20th day of July, 1802. He was the eldest son of Reuben Cash, a man of clear mind, energy of character, of English and German descent, and one of the early settlers in Orange county, where he lived for many years a prudent man and a good citizen, until the time of his death in 1828.

The days of Merit's boyhood were passed on the farm without incident of special interest. He attended the district school as opportunity afforded, enjoying the limited advantages furnished by the common schools of interior towns at that period.

At about the age of seventeen years he became engaged as a teacher and was successful in the enterprise until he determined to study for the medical profession, when he relinquished it for the purpose of attending an academy not far distant. He had also, for a time, a private tutor in a theological student near where he resided. The wholesome moral influence he derived from this preceptor was not less decidedly favorable than his literary instruction. The time of his medical pupilage was severally occupied under the direction of Dr. James Herron, of Warwick, Dr. James P. Youngs, of Edinöville, and Drs. Royee and Newkirk, all of whom were prominent practitioners in Orange county. He attended medical lectures at the College of Physicians and Surgeons in New York, during the winter of 1824-25, and became a licentiate in medicine from the Medical Society of the County of New York in the spring of 1825, then under the presidency of Dr. David Hosack. Deviating from the common belief that it is impossible to achieve honor and success in one's own town, the doctor made the experiment and commenced professional life amid the companions and scenes of his boyhood where it would be difficult to mark the time that makes the boy a man. But the experiment was successful. Confidence was secured and held by a high sense of honor. Nor could it have

been so secured without professional skill. Patients came early under his care, and his business continued large and prosperous. The department to which he was most devoted, and in which he most excelled, was midwifery, and this too in the face of that flimsy though hugely popular objection, that the physician and obstetrician must be a *married* man. Throughout a wide range of country he was highly esteemed for his counsel in difficult parturient cases.

At the age of forty-one Dr. Cash was married to a daughter of the Hon. Joseph Davis, who is said to have been an amiable and accomplished woman. A few brief months terminated her life and all the pleasure it had promised.

Dr. Cash was always interested in the political questions of the day and was often elected to county offices. He represented his Assembly district in the State Legislature in the years 1834, 1835, 1837. Each year he was on the important committee of ways and means, and was chairman of the committee in 1837. The bill for incorporating the Albany Medical College, and the Young Men's Association for Mutual Improvement in the City of Albany, were among the measures he fostered, and he lived to see them useful and prominent institutions, and he always continued a lively interest in their welfare.

Dr. Cash was president of the Orange County Medical Society, and also delegate to the State Medical Society, to which he was elected permanent member in 1845. He was present at the meeting of 1853, and read an article entitled "Rational Medicine," which was published in the Transactions of the same year. It was at this meeting that I first met him, and I think that all present must remember the spirited eulogium that he pronounced upon the profession in speaking upon the resolution to print ten thousand copies of Dr. Clark's address. He had at that time, although but little more than fifty years old, retired from the active duties of the profession to the enjoyment of a quiet agricultural life, and to improving and beautifying his ample estate.

He was again present at the meeting of 1854. My impressions of Dr. Cash were that he was a man rigidly exact, and inflexible from his convictions of right. With his opinion formed upon any subject I have no idea that it could have been readily changed, and his views would have been the same to-morrow as to-day. His tout ensemble reminded me more of Dr. McDowell, of St. Louis, than of any other person, though his manners were

more rigid and exact than those of the latter. He was enthusiastically devoted to the interests of the medical profession, and as bitter in his enmity towards charlatans of every name, and to the chicanery they use in trifling with human health and life. To him it was, and justly, the unpardonable sin, and always received his open rebuke. Upon recommendation of this society, in 1859, the Regents of the University conferred upon him the honorary degree of Doctor of Medicine.

Dr. Cash died at his residence, "Rutger's Place," in Ridgebury, town of Wawayanda, on the 26th day of April, 1861, in the fifty-ninth year of his age. He left no children. His nephew Dr. Merit H. Cash Vail, of New Jersey, bears his name. It is proper to mention that to this society, in which Dr. Cash was long interested, he bequeated the sum of five hundred dollars.

Dr. Cash lived more than fifty years in the very house in which he was born.

There is a pleasing thought in that contentment which prompts a man to the reverence of the paternal roof, to stand where his father stood, and to pass not only the morning of life, but its bustling noonday and its fervid evening beneath it. To see the trees beneath which he sported a child by his father's side extend their branches, wax great, and grow old about him, to see the same murmuring brook where first he wandered for butterflies, murmur on through long years, wear away its banks and change its course; it is a peaceful thought to die where the fathers died and to sleep beside them.

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Article 36. Memoir of Hon. JOHN MILLER, M. D., late of Truxton, Cortland county, N. Y. By GEO. W. BRADFORD, M. D., Secretary of Cortland County Medical Society.

"It is a remark as true as it is old, that the life and labors of the most eminent physicians are known and appreciated by a very limited number of their cotemporaries. Their abstracted and almost isolated position in society arises from the very nature of their avocation." His daily routine of attendance on the sick, in relieving the pains and ministering relief for the ill flesh is heir to, forbid his striving for wealth and power in the very marts of commerce, or in other scenes where these are acquired almost in a day. Even in the toils and sacrifices of war, his arena is in the chamber of suffering and death, while all the glory that gilds the battle field is freely lavished upon others. True as the above remarks are in relation to a very large portion of the medical profession, yet instances do occur in which, by a combination of strong natural abilities, energy of character, indomitable perseverance, moral courage, and physical endurance, so overcome all obstacles that the possessor attains to an eminence of position, professionally and publicly, that is wide and permanent.

Such, if we mistake not, is the one whose name stands at the head of our sketch, and whose useful life we would attempt to delineate. John Miller was born in the town of Armenia, county of Dutchess, N. Y., on the tenth day of November, 1774. His advantages for early education were very limited, he having attended the district school but about one year, and enjoyed the privilege of attending a classical school in Connecticut about the same length of time. His boyhood being spent in laboring on a farm. He commenced the study of his profession with Dr. Miller, an uncle of his, in Dutchess county, in the year 1793. At the expiration of a little more than a year, he went to Washington county, N. Y., and entered the office of Doctor Moshier, of Easton, in that county. While residing with Dr. Moshier young

Miller received a severe injury by being thrown from a horse. From this injury he was unable to pursue his professional studies for more than two years. During this period he returned to his home in Dutchess county. After several months residence at home, he was induced by the advice of Dr. Baird, of New York city, to seek an appointment in the then small Navy of the United States. For this purpose, though much against the wishes of his family, he went to New York, where he was presented by Dr. Baird and others with letters of recommendation to Dr. Benjamin Rush, of Philadelphia, whither he repaired, and presented Dr. Rush with his credentials. At that time Miller was in poor health, and being very tall, more than six feet in height, and thin in body, Dr. Rush was somewhat amused that so ghostly looking a young man should think of going into the Navy, and said to him: "Young man, you look better fitted for a skeleton in my office than for a post in the Navy." After recovering from the fatigue of his journey, Dr. Rush went with him to visit the President of the United States, the venerable John Adams, residing in Philadelphia, then the seat of the general government, and through the influence of Dr. Rush obtained the place he sought; and was directed to report himself to the surgeon of the United States brig New York, then soon to sail for Tripoli. At this interview with President Adams, Dr. Rush and young Miller were invited to dine with the President, and did so, where he met General Washington, Fisher Ames, and several other distinguished characters of that day. Upon further acquaintance, Dr. Rush advised Miller to resign his post in the Navy, and proffered him a position in his family and office as a private pupil. This offer he readily embraced, where he remained for nearly two years, accompanying the doctor in his rides into the country, and attending the lectures of Dr. Rush and Dr. Shippen, at the University of Pennsylvania. From Philadelphia he returned to Washington county, N. Y., in 1798, and entered into co-partnership with Dr. Moshier, his former instructor, where he remained until 1801. He was licensed to practice medicine by the Vermont Medical Society in 1800. The law regulating the practice of medicine in New York was not enacted until 1806. On leaving Washington county in 1801, he came into the then town of Fabius, Onondaga county, now Truxton, Cortland county, N. Y., and established himself in the practice of his profession, where he almost unremittingly attended its duties for about

twenty-five years, and occasionally some five years longer. From his early physical training on the farm, he was well prepared for the laborious duties of his profession in a new country. Few men possessed the capacity for physical endurance and unwearied perseverance like him. The country being new, the roads always poor, many times almost impassable, yet he performed an amount of labor almost incredible, frequently riding on horse back thirty, forty and more than fifty miles a day, at all times by night or by day, through storms and sunshine, with an energy that no obstacle could prevent. Many are the anecdotes related of his adventures in the woods and by-paths of Truxton, frequently by torch light, to attend upon some family who, perhaps, were unable to render him any remuneration.

The poor as well as the rich were alike the recipients of his toils. As a practitioner, Dr. Miller possessed, to an eminent degree, the confidence of his employers. His strong mind and retentive memory enabled him readily to discriminate the phases of diseases, and his promptitude and readiness in the administration of relief to the sufferer, at once secured the confidence of the sick. His strict attendance to those entrusted to his care, his kindness of heart led him to sympathize deeply in all their sufferings, these all convinced his employers that his whole energies were enlisted in their welfare. He loved his profession, and while attending to its duties, amidst all his incessant labors, he found time to cultivate his mind by reading much of the current professional literature of the day, and his well balanced mind and retentive memory enabled him to make the best use of what he read. He was elected an honorary member of the New York State Medical Society in 1808, and at the time of his death was the oldest living member of the society by nine years. At the semi-centennial anniversary meeting of the society, in February, 1857, Dr. Miller was present, by special invitation. He entered into the spirit of the meeting with all the ardency of his nature, and many of the members present, who, for the first time there saw him, will long remember "the old man eloquent," and their pleasant and profitable acquaintance with their venerable fellow member. He was the last of that band of physicians who, in August, 1808, organized the Cortland County Medical Society, and its first vice-president, and the oldest living member by ten years. Such was his character and standing in the profession, and gentlemanly intercourse with all members of the

society, that all loved to meet him and to confer honor and their kindest favors upon one so much esteemed and highly venerated.

Having spent the first years of his life in laboring on a farm, Dr. Miller, while yet in the vigor of his days, left his profession and turned his attention to agriculture. Notwithstanding he had relinquished the practical duties of his profession he still manifested an interest in its welfare, always greeting its members with warm cordiality, and to the day of his death no one abhorred and despised the varied systems of quackery with which our country abounds more than he. After relinquishing his practice and embracing the occupation of farmer, he entered with his usual zeal into all the duties of his chosen occupation. He early took a prominent part in all departments of its labors. He was an active member of our agricultural societies until the infirmities of age debarred him from attending its meetings. The intelligence and the energy with which Dr. Miller entered into all the affairs of state as well as into his professional avocations was such that he early became prominent in public life. His first public office was that of coroner, which appointment he received from Governor George Clinton in 1802. He was appointed post master in the town of his residence in 1805, and retained the office for twenty years. He was appointed a justice of the peace in 1812 and discharged its duties until 1821. He was one of the judges of our county courts from 1817 to 1820. He was elected a member of Assembly from this county in 1816, again re-elected in 1820 and again in 1846. This same year he represented the county in the convention for revising the Constitution of the State. In 1826 and 1827 he represented the twenty-second district in the Congress of the United States. In all these positions of public trust he evinced the same energy and determined will, and prompt action he had shown in his professional career. His readiness to sacrifice personal interest and ease to the public good, and his experience in public life, with the honesty of purpose manifested in his intercourse with his associates, enabled him to exert a commanding influence over any deliberative body. These, with his usual energy, his eminent social vivacity, rendered him a welcome guest in all social gatherings. "He loved his friends, his profession and his country, and ardently labored for the improvement of each. He was free and frank in manner, generous and friendly in disposition, engaging in address, of active temperament and indeed possessed all the social qualities

of a gentleman and the stirring energies of the man of business."*

He was tall and erect in stature, and even in his last years still retained his firm step and erect position, and never exhibited the decrepid old man in appearance or in loss of intellect, but entered into conversation with all the energy and fire of his youthful days.

He left the impress of his character on all he said or touched. He was zealous in all he believed to be right, yet kind and gentlemanly to all who differed from him in views. He was no bigot. Always expressed his opinion of men and measures freely and fearlessly and was always ready to listen to those who believed differently. We have alluded to Dr. Miller's indomitable energy and resistless perseverance in any thing he felt his duty to perform or which he was anxious to accomplish. What he had to do he did with all his might. No difficulties or opposition dismayed him, but seemed rather to infuse in him a more determined purpose to overcome all. Obstacles that to many would seem insurmountable, only served to make him the more determined to conquer. Nothing that was in the power of a human being to accomplish he left undone.

*"The wise and active conquer difficulties,
By daring to attempt them; sloth and folly
Shiver and shrink at sight of toil and hazard
And make the impossibilities they fear."*

We cannot but relate one of the characteristic events of his life, his determined will to overcome seeming impossibilities, which he accomplished in securing to himself the lady who afterwards became the sharer of his fortune, the intelligent, amiable, loving partner of his life.

Before coming into this county in 1801, he had formed an attachment to, and an engagement with a young lady living in Rensselaer county, N. Y., whom he expected to become his partner and help-meet in and through the journey of life. After his settlement here they held a constant correspondence, and while the doctor was laboring with all his energies to prepare for his chosen one a home, she remained behind making preparations for a residence in the wilds of the west. Matters went smoothly on with them for some months, each frequently receiving assurances of faithfulness and mutual attachment. After some time letters were not as

* Goodwin's history of Cortland county.

frequently received by either party as formerly, and at last ceased entirely. The doctor wrote often but received no reply to his anxious enquiries for the cause of this total silence on the part of her he so ardently loved. Just so with the lady, she too had written time and again, seeking to know the cause of this seeming coldness, this abandonment of him to whom she had plighted her first love. Each had come to the conclusion that the other was false to the sacred engagement promise.

Matters remained thus for some time without either hearing any thing from the other. At last the doctor received a letter from a friend of his living in Troy, (the place of the young lady's residence,) informing him that the young lady in question was to be married to some one there, on such an evening, but a few days from that date. The friend knowing something of the previous engagement of the doctor to the lady, learned she had been induced to marry the person of her second engagement from the belief that the doctor had cast her off—had forfeited his plighted honor, she not having heard any thing from him in reply to her letters for many months. The friend at once suspected something wrong. He knew John Miller would never be guilty of so base an act as to leave one to whom he was betrothed in such a manner. That if it were impossible for him to fulfil his engagement, or if he desired to cancel the obligation, Miller would at once frankly and honestly inform the young lady. That he was far too honorable, too noble to do so base an act. Believing this he wrote the doctor of the expected wedding to take place on the day designated. At that early day our country mails were "like angels visits, few and far between," consequently Miller did not receive his friend's letter until less than twenty-four hours before the time appointed for the wedding. This was in the latter part of the month of March, when the snow was melting away by the rays of the warm sun of spring, the roads were in bad condition, riding exceedingly bad and in some places dangerous, and the doctor one hundred and thirty miles from Troy. Stages or railroads were at that time out of the question. What should he do? give up his heart's desire, his long wished for and earnestly sought companion, her on whom his most ardent love had centered, and remain during all his future life under the imputation of forfeiting his plighted faith and acting in a dishonorable manner with a noble worthy lady, or should he make one effort to retrieve all. His mind was soon made up. He mounted his faithful horse

"Gershom," one he had often tried in cases of urgent necessity, one too in all respects possessed of the physical endurance—the determined energy never to be outdone—equal even to his master. "Gershom" was headed for Troy, a distance of one hundred and thirty miles, to be passed in less than twenty-four hours notwithstanding all the snow, mud, or dangers by the way. Faithfully and nobly did "Gershom" perform his task.

Near the close of the day, when the doctor had arrived near the west bank of the Hudson river, he discovered the ferry boat just leaving the shore to pass over to Troy. It was almost dark, every moment of time was precious, fearing he should be too late for a successful termination of his hopes, his hard day's labor, and all might be lost, he raised his voice to its utmost pitch, swinging his hat; "Gershom" at once responded, made his last charge, and arrived on the bank of the river in time to pass. This proved to be the last time the boat went over that night.*

At an early hour in the evening Gershom stood at the door of the residence of the young lady, just as the guests were assembling to witness the marriage ceremony. The doctor, covered with mud and wet, riding-stick in hand, walked up the steps of the mansion and knocked at the door. The father of the young lady answered the call, and who should he see standing there but John Miller, who, without ceremony, makes the inquiry: "Is Phoebe at home?" "Yes," was the reply. "Can I see her?" asks the doctor. The father replies, "I will inform her you are here—walk in." The doctor went into the hall, and remained standing, with hat in hand. In a few minutes Phoebe made her

* The next morning after he went to Troy in one day, the doctor cautioned the boy who rode Gershom to water, saying, "take care boy, Gershom is a head-strong old fellow, and if you do not look out he will run away with you." The boy rode him to the river, Gershom was frightened by the falling of a pile of lumber on the bank of the river, and ran away with the boy, sure enough.

Gershom was as ambitious and full of fire as his master. When riding beside another horse he would always keep half his length ahead of any horse that could be brought alongside of him. The faster they rode so much the faster went Gershom. The doctor used to say Gershom would trot with all his might on level road and down hill, but would race up hill to rest himself.

Gershom served the doctor most faithfully more than fifteen years, when he was permitted to spend the remainder of his days in ease, not often used; and when he had become toothless from age, he was kept upon ground feed, and tenderly cared for as long as he lived. The doctor's mother lived with him many years before her death, which occurred in 1846. She was a woman of great courage and perseverance. An anecdote is told of her and Gershom, which I will relate. After the doctor had given Gershom his time, the women of the family used sometimes to ride him, the old lady with others. On a certain time, when the old lady was more than seventy years old, she was riding on the back of Gershom, when some of the inhabitants of that vicinity came up behind her, and knowing Gershom's disposition not to let any one pass him, they thought to try him in his old age. The old lady was ready, gave Gershom the reins, and away he went. The men at their utmost speed following in the rear, and could not pass. This night pleased the old lady. They rode some several miles, and gave up the chase.



appearance, an interview was solicited by the doctor, explanations followed, and a perfect reconciliation was the result. Their letters had been intercepted on both sides by the man who had almost obtained possession of the prize by his rascality, but who that night went home wifeless.

They were married in 1805, and a happy union it proved to be. Mrs. Miller was a lady of rare accomplishments, of ardent piety, and in all respects a fit companion for her worthy husband. They had eight children—five sons and three daughters. Mrs. Miller died much lamented in 1834, aged 59 years. Of the family only one of the sons and two daughters survive. All arriving to mature age, and most of them falling a victim to that destroyer of our race—consumption.

During the prevalence of an epidemic typhoid pneumonia which prevailed extensively throughout the country during the winter of 1812-13, the doctor's labors were herculean. He was eminently successful in the treatment of that disease, loosing but two cases out of the hundreds that he attended. This success made the demands for his services very urgent, frequently twenty and thirty miles from home. He allowed himself but two hours sleep in the twenty-four, always directing his family to awaken him when he had slept the two hours. He then started on his tour. At every house that he called at some one of the family were sure to have a bucket of oats to feed the doctor's horse, while he (the doctor) made the necessary examination and prescription for his patient. As soon as through he started for the next patient, his horse at a rapid speed. The same course was pursued at every house where he called, through the night or day. When, in his circuit, he came near home, he would go there and exchange his horse for another, and again push for the next patient. This course he pursued during the prevalence of the epidemic, frequently riding from ninety to one hundred miles a day, and visiting from thirty to fifty sick in that time.

In the temperance cause, the doctor spent much time and large sums of money in the diffusion of temperance publications among the inhabitants of his town, holding meetings in the several school houses, and urging with earnestness and eloquence the adoption of the practice of total abstinence from all intoxicating beverages as the only safe ground or hope for the removal of this giant evil from our land. He was firm in the belief of the beneficial effect of a wise prohibitory law to prevent the traffic in

intoxicating liquors, and labored hard at home and abroad to accomplish so desirable a result. In this cause Dr. Miller took an early and an active part. During his days of pupilage he once saw beautiful a child sacrificed in consequence of the intoxication of the physician called to its relief in an hour of suffering. This made a deep and lasting impression on his mind, and led him at the commencement of his labors as practicing physician firmly to resolve to abstain entirely from all intoxicating drinks as a beverage. In this determination he persevered to the end of his life. In his prescriptions for the indisposed he avoided in all practicable instances ordering alcoholic or any other intoxicating article. No one can ever charge Dr. Miller with being the means of their becoming lovers of strong drink. He was long an officer in the New York State Temperance Society, and frequently attended its meetings at Albany, and by his wise counsels and sound judgment obtained a commanding influence in that body. In his labors in that cause in his own county and neighborhood, he was untiring, ready to sacrifice his ease, to contribute of his means, and in all honorable ways labor to drive the monster intemperance from the land. Many of the youth of his vicinity can testify to his faithfulness and earnestness in portraying the evils of intemperance, and the dangers of taking the social glass. His whole soul seemed alive to the evils and the dangers of intoxication.

At an early day the doctor gave to the Presbyterian Church and Society of Truxton two valuable lots of land in the centre of the village, as sites for a church and parsonage, also one other lot as a site for a public school house; and, in the expenses incurred in erecting these public buildings, the doctor was a liberal contributor. It was entirely through his influence and liberality that the church edifice was finished in a neat and tasteful manner. His seat in the church was always occupied by himself or his family. An instance is not recollected when his pew was vacant on the Sabbath. Even when they were destitute of a pastor, or any one to supply them, the doctor and his family were seen to be in the church to hear a sermon read, always desiring to have public worship in the house of God on every Sabbath day.

In the support of the varied objects of benevolence of the age, and in the institutions of the gospel in his own vicinity, Dr. Miller was a firm friend and a contributor. The church and

society of the town of his residence are greatly indebted to him not only for his liberal aid in erecting their house of worship but for the yearly support of its ministry.

For the last two years the doctor's health had been declining and he has been out but little, yet he always most cordially received visits from his friends and entered with all his usual vivacity into conversation, and where any subject was introduced in which he felt deeply interested, he would arouse to his accustomed vigor of mind and pour forth the feelings of his heart with great rapidity and eloquence, his thoughts frequently out-running his utterance which some times led him to hesitate, but all who heard him were at once reminded of his youthful energy. He retained his wonted faculties almost to the last hour of his long life; was perfectly sensible of the steady and sure approach of death; yet, with calmness and life long carefulness, made every preparation for the end. Having made every necessary and equitable disposition of his property, he gave explicit directions to the undertaker about his coffin and burial, that all should be done in a plain unostentatious manner, avoiding all needless expense. Thus he actively and usefully lived, thus he calmly and quietly died on the 30th day of March, 1862, in the 88th year of his age, leaving behind him abundant evidence of his preparation for, and acceptance, through the grace of our Lord and Savior, into the rest prepared for the just.

His funeral was attended by a large concourse of his neighbors and friends from distant parts of the county. Notwithstanding his request that he should be buried quietly his long and useful life had secured too many friends that desired to manifest their love for his character, their veneration for his age, and their sympathy with his family, to permit him to be interred without mingling their tears with his friends. An impressive funeral sermon was delivered by Rev. Caleb Clark, who for more than forty years had been the confidential friend and the spiritual adviser of himself and family.

His funeral was also attended by a large number of the members of the Cortland County Medical Society, who, to the last, manifested their love and veneration to their aged fellow member. After the funeral services were closed the members present assembled, when Drs. F. Hyde, Geo. W. Bradford and C. Green, were appointed a committee to express the feelings of the society on the occasion, who subsequently presented the following:

Resolved, That we bow in humble submission to the dispensation of an all-wise Providence who has separated from us one who was "a prince among men," a link which has hitherto connected us with a remote and heroic generation; in which event the medical profession has lost one of its brightest ornaments, the Christian community one of the firmest supporters of its institutions, the State one of its most enlightened citizens, the nation one of its purest patriots, and his family a most beloved and venerated patriarch.

Resolved, That the above resolution be presented to the family of deceased, and published in the county papers, and that the committee prepare a biographical sketch of Dr. Miller, to be contributed to the Transactions of the State Medical Society.

In submitting the above resolutions Dr. Hyde impressively remarked :

"We are here to-day to take part in the solemn duty of bearing to the grave our venerable friend and brother, the senior member, by several years, of the Cortland County Medical Society. With the solemnities of this occasion are blended circumstances of more than ordinary significance. In this death has been sundered another of the very few remaining links connecting us with the early history of our county and our profession. Possessed of rare intellectual and physical powers, cultivated too as they were, with an unconquerable energy amid the stirring events which were to give form, character and stability to American society, our honored friend Dr. Miller was eminently fitted for infusing into all with whom he mingled much of the vitality of an earlier age. As a medical student, receiving his instructions from the lips of the learned Rush and others not less distinguished for medical acquirements; sought out by the elder Adams as "the promising young Miller," the one on whom it was his pleasure to confer a high professional commission, his early was so thoroughly connected with his later life as to secure him the power he so happily exerted of instructing as well as charming all with whom he associated. Entering active life at a period so full of important events and with ample facilities for contact with its master minds it is not strange that his long life should furnish a history connected with so many incidents that have told on the well being of his race.

"Brothers, he has continued with us a long time, being for several years the oldest honorary member of the State Medical

Society, and finally fully laden with the choicest fruits of a rare and useful life he drops from our midst the last of that noble little band who more than half a century since organized the Cortland County Medical Society which we represent here to-day. Who shall fill his place? How shall the breach be repaired now intervening between us and the professional fathers of a past generation?"

Article 37. Abstract of Proceedings of the Medical Society
of the State of New York. Fifty-fifth Annual Meeting.

The Society met pursuant to statute, on Tuesday, February 4,
1862, at eleven A. M., and was called to order by the President,
Dr. EDWARD H. PARKER.

There were present and took their seats the following

PERMANENT MEMBERS.

Dr. Edward H. Parker, President.
Sylvester D. Willard Secretary.
Edward Hall,
Alden March,
John F. Trowbridge,
James V. Kendall,
Horace K. Willard,
Charles Barrows,
H. N. Porter,
Daniel P. Bissell,
W. Potter,
Benjamin E. Bowen,
Augustus Willard,
Levant B. Cotes,
Tabor B. Reynolds,
James Lee,
Samuel Hart,
John H. Griscom,
M. M. Marsh,
William Taylor,
Howard Townsend,
S. H. French,
Thomas C. Brinsmade,
S. Oakley Vanderpoel,
Joseph N. Northrop.
Hiram Corliss,
Joseph Bates,

Dr. James Thorn,
 Mason F. Cogswell,
 Thomas W. Blatchford,
 William Govan,
 N. C. Husted,
 C. M. Crandall,
 Peter Van O'Linda,
 A. F. Doolittle,
 John V. P. Quackenbush,
 Austin White,
 James McNaughton,
 Philander Stewart,
 Abel Green,
 Nicol H. Dering,
 Edward R. Squibb,
 Horace Green,
 William P. Townsend,
 Freeman Tourtelot,
 Thomas Hun,
 Peter McNaughton,
 Charles A. Lee 48.

From the Connecticut Medical Society :

Dr. Ralph Deming, Litchfield county, Conn.

DELEGATES.

Albany County Medical Society,	John Swinburne, Albany.
	William F. Carter, Cohoes.
	William H. Bailey, Albany.
	Peter P. Staats, Albany.
Albany Medical College	Charles H. Porter, Albany.
Broome Co. Medical Society . .	P. Brooks, Binghamton.
Bellevue Hospital Med. College	Isaac E. Taylor, New York.
Cortland Co. Medical Society .	H. C. Kendrick, McGrawville.
Chenango Co. Medical Society .	M. M. Wood, Greene,
	A. Baker, Norwich,
Columbia Co. Medical Society .	H. B. Salmon, Stuyvesant Falls.
Delaware Co. Medical Society .	S. C. Pettengill, Hancock.
Dutchess Co. Medical Society .	H. A. Carrington, Lansingburgh.
Geneva Medical College	Joseph Beattie, Geneva.
Genesee Co. Medical Society . .	John Root, Batavia.

Greene Co. Medical Society...	G. Botsford, Greenville.
Herkimer Co. Medical Society..	Griffin Sweet, Fairfield. J. E. Casey, Mohawk.
Kings Co. Medical Society....	Theodore L. Mason, Brooklyn. J. H. Hobart Burge, Brooklyn. C. L. Mitchell, Brooklyn. J. C. Hutchison, Brooklyn. James M. Minor, Brooklyn.
Long Island College Hospital.	William H. Dudley, Brooklyn.
Madison Co. Medical Society..	J. K. Chamberlain, Cazenovia.
Monroe Co. Medical Society...	Douglas Bly, Rochester. H. W. Dean, Rochester.
Montgomery Co Medical Society,	Alexander Ayres, Fort Plain.
New York Academy of Medicine	Oliver White. John P. Garrish. John W. Green. Jared Linsley.
New York Co. Medical Society..	Thomas C. Finnell. Alfred Underhill. Henry S. Downs.
Niagara Co. Medical Society..	Peter Failing, Gosport.
Oneida Co. Medical Society...	Frederick M. Barrows, Clinton. John P. Gray, Asylum for Insane.
Onondaga Co. Medical Society..	Henry Didama, Salina. Hiram Adams, Fabius.
Ontario Co. Medical Society..	George Cook, Canandaigua.
Oswego Co. Medical Society...	T. J. Greene, Parish. A. S. Coe, Oswego.
Otsego Co. Medical Society...	J. K. Leaning, Fly Creek.
Rensselaer Co. Medical Society..	A. D. Hull, Lansingburgh.
Saratoga Co. Medical Society..	M. L. Finch, Jonesville.
Schoharie Co. Medical Society..	Sylvester M. Van Alstyne.
Sullivan Co. Medical Society..	John D. Watkins, Liberty.
Ulster Co. Medical Society....	Abraham Crispell, Rondout. J. Van Hovenburgh, Kingston.
Warren Co. Medical Society..	James Ferguson, Glens Falls.
Washington Co. Medical Society	R. Blanis, Fort Miller.
Wayne Co. Medical Society...	Darwin Colvin, Clyde.
Westchester Co. Medical Society	Edmund Arnold, Yonkers. Jas. H. Curry, Shrub Oak..55.

Dr. Parker then read his inaugural address as follows :

GENTLEMEN : It is my first duty to offer to you my sincere thanks for the honor you have conferred upon me in selecting me as your presiding officer. A chair which has been filled by such men as Romaine, Stearns, and the Becks, and by those living worthies whose presence forbids me to enumerate them, confers honor upon any one who occupies it.

My second duty is the sad one of announcing to you formally, the death of my immediate predecessor in this office—Dr. Daniel T. Jones. When we parted with him at the close of the session over which he presided with so much wisdom, no one anticipated so speedy an end to his life. So full of vigor, so redolent of health, it seemed as if he would have borne for years the assaults of sickness. It is not my place to eulogize him, but this I may say—that in my limited acquaintance with him, I learned to respect and admire the manly truthfulness of his whole character, which served as a worthy setting in which the talents entrusted to him were made to show their charming lustre.

The political events of the last year, which have affected more or less every pursuit, I might say every family circle of our country, have produced a marked effect upon our profession. Military surgery has suddenly assumed an unusual prominence, and there are, I suppose, few of us who have not reviewed the topics which especially interest practitioners who have the professional charge of soldiers. The modifications required in the treatment of gunshot wounds in consequence of the effects of the new projectiles differing from the old, as well as those which come from the use of anæsthetics have been among the subjects which have been earnestly studied. But it is to be borne in mind that the medical officer of the army, so far as he acts as a surgeon proper, is almost a specialist, while a large share of his duties is purely medical. No regiment is constantly going into action, and the shafts of disease are far more fatal to soldiers than the bullets of the enemy. As a defence against the latter, the engineer is required to throw up his earth works ; and it is equally the duty of the medical officer to see to it that the men under his charge are as far as possible protected from the former. Prophylaxis, whether it be by using quinine to prevent malarial disease, or by compelling attention to the sinks and other sources of effluvia to avoid camp dysentery ; or by seeing to it that cleanliness of the person is enforced as an especial defence against the invasion of

typhoid diseases—or by a careful supervision of the means and modes of cooking—prophylaxis, I say, is a far more important study than that of the latest way of doing an amputation. The character and mode of the operation required from a gunshot wound is usually settled by the ball that inflicts it, and that with a profound disregard of the theories and dogmas of the schools, whether they be English or French, German or Russian, compelling one to take his flap, and to separate the bones where he can, not where he would.

I am aware that I speak to masters of the profession. But do not the masters sometimes overlook these apparently little things, which are in reality the truly great things of life. To whom does the world look up as the more eminent army surgeon, to the man who has done the most operations, or to the man who has kept the troops under his charge in the highest degree of health? Which should each of us prefer to be? I do not doubt that the answer to both questions would be in favor of the operator; and yet every one of us knows it ought not to be so.

How much more danger is there of this false standard of distinction prevailing among those of our profession who are actually in the field. We and they both need to have it impressed upon our minds that amputation is a reproach to our art—a continued acknowledgment that our skill is not equal to the restoration of the parts. And it injures no one to recall the fact that we have done better if we have prevented an army from being decimated by sickness than if we have made a hundred amputations.

If it seems to any one to be out of place here to refer to these topics, let me suggest that we cannot tell who of us may be called to assume these duties during the coming year. Bontecou, Hoff, McNulty, and Hamilton, could not at our last session have supposed that to-day they would be in the field, neither do we now anticipate it for ourselves. But events crowd upon us, and it is well that we should not be unprepared if these changed times should require of us a different use of our professional knowledge.

On one point I take it for granted we are of the same mind, viz: that the services of each and all of us are at the command of our country whenever and wherever they are needed.

It is a matter of congratulation that our State was, if I am not mistaken, the first to take especial pains that incompetent persons

should not assume the duties of regimental surgeons. At an early day applicants for these professional positions were required to pass an examination which should be in some degree a test of their qualifications. As the adoption of this measure was in consequence of the advice of the Surgeon General of the State, I would suggest that this society should express their approval of it by a vote of thanks.

The duty a military surgeon owes to the wounded when the battle is lost, is a topic of interest. I am aware that much may be said concerning the claims that the remainder of his regiment may have upon him, to justify his leaving them to the care of the victors. But it is more in accordance with the spirit of our profession, which is never deficient in bravery or self devotion to the good of others, that if the wounded are in any numbers the surgeon should remain with them. The surgeons of the victors usually have as much as they can do among their own troops, and if any are neglected it naturally is the prisoners. With the necessary confinement trifling neglects become serious, and the result of an operation may be entirely different when advised and performed by a known and tried friend or an avowed enemy.

The very touch of a friendly hand is to a sick prisoner often more than medicine. To all of these, it seems to me, the soldier has a claim, and if he knows he may expect such devotion from his surgeon, he will fight with less hesitation. These principles hold, of course, only in large engagements, when there are many wounded on both sides.

At the battle known as that of Bull Run, large numbers of our wounded were collected in a church, and a number of surgeons of our army were present with them. There was ample time for all to have retired with the forces. A few so improved their time, but the majority remained, and for months suffered all the dangers as well as inconveniences of prison life. True as the latter were to all the teachings of our profession, when to be true was not a slight thing, it seems to me proper that this society, representing as it does the profession of our State, should mark this conduct with its approbation. I would urge upon you some such expression of this opinion, as may make those gentlemen, whether from our own or other States, feel that their heroism was noticed and applauded by their professional brethren.

I had hoped to lay before you some plan, by the adoption of which the sufferings of war, so far as they concern the wounded

men, might be lessened by allowing the surgeons of the contending armies to visit the battlefields unmolested, for the purpose of caring for the wounded, while at the same time they could superintend the decent burial of the dead. But I have found so many obstacles at the very commencement of the effort that it has seemed useless to go further. Military men are jealous of allowing any foe to go within their lines for any purpose, and it cannot be denied that a spy might pretend to be a surgeon and obtain important information while professing to be occupied in these sacred duties.

On the part of the United States Government, these difficulties could, I believe, have been overcome; but there has been such a strange disregard of the ordinary dictates of humanity on the part of those who are in arms against it, that I have not thought it best to persevere in the attempt. If the society can devise any way of accomplishing this end, it would be well worthy of it to do so.

Gentlemen, I make no apology for having given this tone to the commencement of our session. I only add that it is my earnest hope, would that I could say expectation, that before another anniversary shall occur, peace may be within all our borders.

Dr. Parker then announced the following committee on credentials: Dr. Porter, Oneida; Dr. Ferguson, Warren; Dr. Willard, Albany.

Dr. Potter presented the following:

Resolved, That this society does not hold itself responsible for the doctrines or statements embodied and contained in any paper read before it, or published by it.

Resolved, That whenever the author of any paper presented to and published by this society shall see fit to publish the same in any medical journal or periodical, or in a separate pamphlet form, he be required to publish, in connection therewith, the above resolution; and, on refusing or neglecting to do so, that the offence and the offending member be subject to the action of this society.

On motion of Dr. Willard, the resolutions were laid on the table.

The following communications were received:

A communication from Onondaga county entitled, "A paper read by Dr. Jonathan Kneeland, January 28, on Healed Ulcers of the Stomach."

"A paper read before Onondaga Medical Society, January 28, 1862."

"Case of Triplets, by Guido Furman, M. D., from the New York County Medical Society."

The President announced the following committee on nominations :

D. P. Bissell.....	Oneida.
S. Oakley Vanderpoel.....	Albany.
Abraham Crispell	Ulster.
Douglas Bly.....	Monroe.
T. C. Finnell	New York.
S. H. French.....	Broome.
Edward Hall.....	Cayuga.
T. B. Reynolds.....	Saratoga.

Dr. Bowen offered the following :

Resolved, That a committee of two be appointed by the chair to extend an invitation to such members of the Legislature as belong to the medical profession to attend the meetings of this society during its session. Adopted.

Drs. Bowen and Potter were appointed the committee.

Dr. Willard presented a memoir of Dr. Merit H. Cash, of Orange, and announced his legacy to the society of \$500.

The Secretary asked that the time for Dr. Swinburne's paper, entitled "Notes of a Post Mortem in a Case of Supposed Murder," or Review of the Budge case, be made three o'clock on Wednesday afternoon. The hour named was so appropriated.

Dr. Bowen reported that he had invited the following gentlemen of the Legislature: Drs. Beadle, Chemung; Cowles, Greene; Purdy, Hall, Peck, Lamont, Holton, Bowen, and Dr. Freer, of the Senate.

Report accepted, and committee discharged.

Dr. Finnell presented pathological specimens, and paper on Dysentery, Peritonitis, &c.

[Dr. T. C. Finnell, of New York, presented three pathological specimens. The first was the bones of the foot and leg, removed from a patient, æt. eighteen years, who eight years previous to her death suffered a compound fracture of the ankle-joint by the falling of a heavy piece of timber upon it. The foot was turned strongly inwards, and remained ever after in that position. The ankle-joint, tarsus, and metatarso-phalangeal articulations were firmly ankylosed. Interstitial absorption of the bones of the

tarsus had taken place to such an extent as to leave a mere shell of the form of the bones. The second specimen was a portion of skull showing a compound fracture, caused by a blow from a brick, the interesting feature of the case being the presence of a portion of the missile firmly imbedded in the bony structure; this remained in that situation for two weeks previous to the death, without giving rise to any cerebral symptoms. The third specimen was the skeleton of a monster. He also exhibited some barbarous-looking obstetrical instruments which had been the property of an old Cuban physician, consisting of pelvimeters, sounds, crotchets, forceps, perforators, etc. Lastly he read a case of dysentery in a child, æt. 9, ending in suppurative peritonitis, spontaneous perforation at umbilicus, with discharge of four pounds of pus; and perfect recovery at the end of four months.]

By Dr. Corliss, to make the hour of meeting two o'clock in the afternoon. Amended, on motion of Dr. Griscom, to meet at three o'clock.

The Secretary read the following communication from Oneida County Medical Society:

To the Medical Society of the State of New York:

At the semi-annual meeting of the Oneida County Medical Society, held at their rooms, on January 14, 1862, the following preamble and resolution were unanimously adopted.

Whereas, Great exertions are now being made by circulating petitions throughout the country, asking Congress to pass a law appointing homœopathic practitioners to the post of army surgeons, therefore,

Resolved, That a committee of three be appointed to memorialize the State Medical Society to take such measures as its wisdom may dictate to maintain the honor and position of the medical profession, and also to express to our member in Congress the decided disapprobation of this society to such an unwise innovation.

The undersigned having been appointed a committee under the foregoing resolution, would respectfully present it as an expression of their own desire in the premises, and urge upon the State Medical Society the expediency of counteracting as far as possible any influences calculated to confer exclusive privileges upon any particular set of practitioners, or allow exemption

to any from the usual and regular ordeal and examination required previously to an appointment as surgeon in the army.

It would be a work of supererogation in us to recount the varieties of empiricism connected with the homœopathic practice to an enlightened body of physicians as compose the New York State Medical Society, and we would, therefore, conclude by submitting the subject without further remark.

Respectfully submitted,

N. H. DERING,

D. G. THOMAS,

C. L. HOGEBOOM,

Committee.

Utica, January 26th, 1862.

On motion of Dr. White, of the Academy of Medicine, the communication was laid upon the table for future consideration.

By Dr. Bissell:

Resolved, That the thanks of this society be rendered to the President for his interesting and suggestive inaugural address, and that a copy of it be requested for publication in the Transactions of the Society.

Resolved, That a committee of three be appointed to consider and report such action thereon as may be deemed necessary. Adopted.

The following committee was appointed, viz: Drs. Bissell, Howard Townsend and Jas. V. Kendell.

The committee on credentials submitted their report, which was accepted.

The following gentlemen were invited to seats during the present session of the society:

Dr. H. S. Crandall	Madison.
Nelson Rusk	Columbia.
Calvin C. Covell	Delaware.
O. E. Lansing	Rensselaer.
U. G. Bigelow	Albany.
J. H. Case	Albany.
F. J. D'Avignon	Clinton.
John R. Gregory	Rensselaer.
Matthew H. Burton	Rensselaer.
John J. Myers	Albany.
John P. Whitbeck	Albany.

J. M. De La Mater.....	Albany.
James L. Babcock.....	Albany.
Henry March	Albany.
Henry S. Case	Albany.
M. L. Mead.....	Albany.
E. S. Lyman.....	Chenango.
George F. Shrady	American Medical Times.
William Lamont	Schoharie.
J. B. Cowles.....	Greene.
James R. Bates.....	Jefferson.
C. Macfarland	Surgeon 81st reg., N. Y S. V.
J. R. Boulware.....	Albany.

The Secretary read a resolution relative to criminal abortion, from the Medical Society of Monroe.

The resolution, as follows, was adopted :

Resolved, That in view of the enormous increase of criminal abortion, and the inadequacy of the present law to properly punish the offenders, this society requests the New York State Medical Society to press upon the notice of our Legislature the memorial presented to them by the American Medical Association on this subject.

Resolved, That our Secretary is hereby instructed to transmit a copy of these resolutions to the Secretary of the State Society, at Albany. Adopted.

The society then adjourned, to meet at 3 o'clock.

AFTERNOON SESSION.

The society met at 3 o'clock, P. M., of Tuesday.

The minutes of the morning session were read and approved.

Dr. Theodore L. Mason, of Kings, presented a communication entitled "Polypus Uteri;" by Dr. Gilfillen, of Kings county.

The Treasurer submitted his annual report, as follows :

TREASURER'S REPORT.

ALBANY, *February 4, 1862.*

The Treasurer submits the following report of the condition of the funds of the New York State Medical Society :

Balance in the treasury at the last annual report..... \$144 41

February 5, 1861, received from—

Dutchess County Medical Society, per Dr. Parker..... 5 00

Onondaga County Medical Society, per Dr. Adams.... 5 00

New York County Medical Society, per Dr. Finnell...	\$5 00
Rensselaer County Medical Society, per Dr. Whiton...	5 00
Albany County Medical Society, per Dr. Newcomb...	5 00
Monroe County Medical Society, per Dr. Bly...	5 00
Westchester County Medical Society, per Dr. McMillan...	5 00
Ulster County Medical Society, per Dr. Crispell...	5 00
Queens County Medical Society, per Dr. Ordronaux...	5 00
Kings County Medical Society, per Dr. Squibb...	5 00
Otsego Co. Med. Society, per Drs. Bassett & Northrup...	5 00
Cayuga County Medical Society, per Dr. Van Anden...	5 00
Richmond County Medical Society, per Dr. Anderson...	5 00
Albany Medical College, per Dr. Quackenbush...	5 00
Geneva Medical College, per Dr. Beattie...	5 00
New York Medical College, per Dr. Budd...	5 00
New York Medical College, per Dr. Peaslee...	5 00
New York Academy of Medicine, per Dr. Adams...	5 00
Schoharie County Medical Society, per Dr. VanAlstyne...	3 00
Greene County Medical Society, per Dr. Varnett...	3 00
Warren County Medical Society, per Dr. Ferguson...	3 00
Genesee County Medical Society, per Dr. Cotes...	3 00
Montgomery County Medical Society, per Dr. Ayres...	3 00
Chenango County Medical Society, per Dr. Wood...	3 00
Madison County Medical Society, per Dr. Parry...	3 00
Herkimer County Medical Society, per Dr. Varney...	3 00
Oswego County Medical Society, per Dr. White...	3 00
Columbia County Medical Society, per Dr. Jones...	3 00
Rockland County Medical Society, per Dr. Govan...	3 00
Broome County Medical Society, per Dr. Brooks...	3 00
Saratoga County Medical Society, per Dr. Finch...	3 00
Monroe County Medical Society, per Dr. Dean...	3 00
Orange Co. Med. Society, per Dr. Wm. H. Townsend...	3 00
For one diploma	10 00

Total amount..... \$294 41

The expenditure for the past year will appear by the following statement, with the accompanying vouchers:

1861.

Feb.	7.	To cash paid E. R. Squibb, M. D.....	\$77 00
	7.	To cash paid C. A Boardman, Janitor.....	6 00
	12.	To cash paid Comstock & Cassidy, reporting,	21 00
	25.	To cash paid David Murray, book-case.....	25 00

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New York County Medical Society per Dr. Finnell.....	\$5 00
Genesee County Medical Society per Dr. Root.....	5 00
Ontario County Medical Society per Dr. Cook.....	5 00
Onondaga County Medical Society per Dr. Didama.....	5 00
Kings County Medical Society per Dr. Mason.....	5 00
Dutchess County Medical Society per Dr. Parker.....	5 00
Rensselaer County Medical Society per Dr. Hall.....	5 00
Erie County Medical Society per Dr. Gay.....	5 00
Albany County Medical Society per Dr. Newcomb.....	5 00
Orange County Medical Society per Dr. Townsend.....	5 00
Westchester County Medical Society per Dr. Stuart.....	5 00
Herkimer County Medical Society per Dr. Sweet.....	3 00
Saratoga County Medical Society per Dr. Finch.....	3 00
Schuyler County Medical Society per Dr. Fish.....	3 00
Otsego County Medical Society per Dr. Lansing.....	3 00
Chemango County Medical Society per Dr. Baker.....	3 00
Broome County Medical Society per Dr. French.....	3 00
Cortland County Medical Society per Dr. Hendrick.....	3 00
Schoharie County Medical Society per Dr. Van Alstyne..	3 00
Money refunded by Dr. Squibb.....	77 00

\$186 00

Dr. D. P. Bissell read a paper entitled "Paralysis and sequela of diphtheria, reflex paralysis."

The subject was generally discussed by Drs. Curry, Bowen, Garrish, Marsh, Govan, and others.

[Dr. Curry, of Westchester, was surprised at the average mortality in Dr. Bissell's cases. He had never met with a fatal case in his own practice, and he was himself an example of a cure of the disease, after having suffered from it for a period of three or four weeks. Rather accidentally he found that a relief from, and in fact a total disappearance of the unpleasant symptoms could be had by exposure to cold, and the administration of a moderate amount of whiskey. He agreed entirely with the views expressed by Dr. Bissell in regard to the character of the affection.

Dr. French, of Rome, had seen several cases of the disease under discussion, but they had all recovered.

Dr. Marsh, of Onondaga, had met with four cases of paralysis.

Two of these terminated fatally. He had frequently met with convalescent cases of diphtheria attended with slight amaurosis, and very many that suffered from a paralysis of the bladder, as shown by the retention of urine.

Dr. Govan, of Rockland county, stated that out of a large number of cases of diphtheria reported from Rockland county, he did not recollect a single case of paraplegia.

Dr. D'Avignon, of Clinton county, thought that the paralysis of the velum was dependent in a great measure upon the length of time that the deposit remained upon it.

Dr. Curwen, of Wayne county, had seen but two cases of paralysis, and they both died.

Dr. Taylor, of Onondaga county, had not known of a case of paraplegia occurring in his county, notwithstanding diphtheria had been very prevalent.

Dr. Garrish, of New York, stated that he had frequently met with cases of paralysis similar to those referred to by the other gentlemen, and had found that stimulating friction, in conjunction with tonics, were attended with the best of results.]

Dr. Cotes presented a resolution relative to the legacy of Dr. Merit H. Cash. The resolution was laid on the table.

The Secretary presented a communication from Dr. Charles C. F. Gay, of Erie, entitled "Laceration of the perineum with destruction of the recto vaginal septum, operation and result"; "Oblique fracture of the femur caused by spasms," by Dr. Charles Barrows, of Oneida; and the following communication from the censors of the southern district:

New York, February 13, 1862.

*To the President of the Medical Society
of the State of New York:*

The censors of the society for the southern district beg leave to report that they have examined one candidate for license to practice medicine under the authority of the society in this State, and that the said candidate, S. Handbury Smith, M. D., a graduate of the University of Stockholm, was duly certified by us as qualified to practice medicine and surgery.

JOEL FOSTER, *Chairman*.

ELISHA HARRIS, *Secretary*.

By Dr. Quackenbush:

Resolved, That Dr. Garrish of New York city be requested to report to this Society at its next session a history of diphtheria.

On motion of Dr. Willard the resolution was laid on the table.
Dr. Porter read a paper by Dr. J. R. Boulware, entitled "Wounded Trenches," &c.

On motion of Dr. Shandy the society then adjourned to meet at 10 o'clock Wednesday morning.

WEDNESDAY MORNING, February 5, 1862.

The Society was called to order by the President Dr. Parker.
The minutes of the previous meeting were read and approved.

Dr. White, of New York, called up the resolutions of the Oneida County Medical Society relative to the appointment of homoeopaths as surgeons in the army and navy, which was laid on the table on his motion yesterday.

Dr. Garriah presented the following from the New York Academy of Medicine:

NEW YORK ACADEMY OF MEDICINE. }
NEW YORK, January 31, 1862. }

J. P. GARRISH, M. D., *Chairman*:

Sir—The following matter is an extract from the minutes of a special meeting of the Academy, held January 29, 1862:

EXTRACT.

The following letter and resolutions from Dr. V. Mott, were read:
Dr. JAMES ANDERSON, *President*

of the New York Academy of Medicine:

Sir—We have all been annoyed with the intimation that the noble surgical staff of our army might be polluted with homoeopathy. We all honor the regular profession, and when an attempt is made to impair its usefulness, or detract from its dignity, we should promptly and unitedly repel it. Influenced by these sentiments I forward to you the accompanying resolutions, and beg you to introduce them at the meeting this evening, as coming from me. A broken metacarpal bone prevents my presenting them in person.

Yours truly, VALENTINE MOTT.

1 GRAMERCY PARK, January 29, 1862.

Whereas, Petitions have lately been presented to the Senate and House of Representatives of the United States, for the employment of homoeopaths as surgeons in the army; therefore

Resolved, That the New York Academy of Medicine deem it their duty in the interest of the army, respectfully to protest against the employment of such practitioners, for the following reasons:

1st. That the practice wherever subjected to accurate observation has failed to establish itself in any hospital.

2d. That in the countries where it originated and attained its fullest degrees of development, it has not been introduced into the army and navy.

3d. That it is no more worthy of such introduction than other kindred methods of practice as closely allied to quackery.

4th. That such appointments would dissatisfy and dishearten the medical staff of the army, who understand the true character of homœopathy, and who have entered the service of their country with confidence that the government would strive to elevate the standard and promote the efficiency of the medical staff, results sure to be defeated by the appointment of homœopaths.

Resolved, That a copy of the above resolution be sent to the Hon. Ira Harris, of the United States Senate, and Hon. F. A. Conkling, of the House of Representatives, with a request that the resolution be presented to the two Houses of Congress.

The resolutions were supported by Dr. Van Kleck, Dr. E. Harris, Dr. J. M. Smith, and Dr. Isaac Wood, and were then unanimously adopted.

On motion of Dr. John G. Adams, the delegates to the State Medical Society were instructed to bring the subject before that body at its meeting at Albany on Tuesday next.

J. H. HINTON, M. D., *Recording Secretary*.

Dr. Potter moved to adopt the resolutions as the sentiments of the society. *Lost*.

Dr. Cotes presented a resolution, which was amended to read as follows:

Resolved, That a committee of three be appointed to take into consideration the subject of introducing homœopathy and other irregular practice into the army, and report at this afternoon session to the society, what action it should take on the subject.

The President appointed the following committee: Drs. L. B. Cotes, Howard Townsend and E. R. Squibb.

Dr. E. R. Squibb read the report of the special committee upon the United States drug law.

Dr. Squibb, from the committee, read a report on the United States Pharmacopœia.

The Secretary presented a biographical memoir of Dr. Edson Carr, of Canandaigua; by Dr. George Cook.

Dr. S. D. Willard presented a list of the surgeons and assistant surgeons engaged in the volunteer service of the State of New York.

The committee to examine the Treasurer's account made its report. The report was accepted and the committee discharged. [Report, see Treasurer's account.]

Dr. Arnold, of Westchester, read a paper entitled "On Medical Provision for Railroads as a Humanitarian Measure, as well as a source of Economy to Companies."

Dr. Mason, of Kings, presented the following :

Whereas, on the principle of self-preservation being the first law of nature, it is the paramount duty of the State to promote by all possible means, the preservation of the health and lives of the people, and their protection against the causes of disease which continually surround them, especially in connection with the conditions of civilization ; and, *whereas*, in the opinion of this society, the health laws of the State have not kept pace with the rapid modern progress of sanitary science, and government fails to enforce many well known means by which disease and death may be averted and longevity and population increased ; therefore,

Resolved, That the bill now before the Legislature, known as the "Metropolitan Health Bill," meets with the cordial approval of the State Medical Society ; as a measure which, though partial in its application to one section of the State, is a step in the right direction, and should be enacted into a law without delay.

Resolved, That the foregoing preamble and resolution be authenticated by the officers of this society, and transmitted to the two Houses of the Legislature.

The Secretary read the Metropolitan Health Bill ; after which, the preamble and resolutions were adopted.

Dr. Brinsmade presented the following :

Resolved, That a committee of five be appointed to draft a Sanitary Code for the State of New York, and submit the same to this society, for its consideration, at its next annual meeting.

The resolution was adopted.

The Chair appointed the following committee : Thos. C. Brinsmade, John H. Griscom, Wm. P. Seymour, Thomas Hun and Theo. L. Mason.

Dr. Hutchison, of Kings, read a paper entitled "Dislocation into the Ischiatic Notch, with Autopsy."

Dr. Downs, of New York, read a paper entitled "Synopsis of

a Case of Peritonitis occurring in a child, and the Administration of large doses of Morphia in its Treatment."

Dr. Marsh presented a pathological specimen of cirrhosis of the liver.

The society adjourned, to meet at 3 o'clock, P. M.

WEDNESDAY AFTERNOON—THREE O'CLOCK.

The Society was called to order by the President, Dr. E. H. Parker.

The minutes of the morning session were read and approved.

Dr. Van Hovenburgh presented a resolution, which on amendment by Dr. Willard, was made to read as follows :

Resolved, That a committee of five be appointed by the Chair, to see Dr. Freer, chairman of the Senate committee on medical societies, and the medical committee of the House, and inquire as to the provisions of the bill incorporating the State Homoeopathic Medical Society, and report to this society what action is necessary in the premises. Adopted.

The Chair appointed the following committee: Drs. Vanderpool, Bissell, Wm. Taylor, Blatchford and Bates.

Dr. Blatchford presented a communication from the Medical Society of New Jersey, asking the opening of a correspondence with this society. On motion of Dr. Blatchford, the Committee on Nominations were instructed to appoint delegates to attend the next annual meeting of that society.

The following communication was received from Dr. E. Harris, of the Committee on Medical Topography :

*To the President of the Medical Society
of the State of New York:*

Dear Sir—The duty which was committed to the Committee on Medical Topography to prepare and submit a special report, as directed by resolution of the society at its last meeting, (see page 359, Transactions for 1861,) has been necessarily postponed. That report cannot be properly completed until next year.

The particular cause of this delay in the committee's work, is sufficiently well understood by members of the society ; and, the chairman would simply state that he has found it utterly impracticable during the last ten months to call the committee together, or even conduct the correspondence. He begs leave, however, to report progress for the committee, and to promise an early completion of the special report.

A few sections in continuation of the general report that was commenced last year by the committee, will be completed by some of the members, and will be forwarded very soon to the Secretary of the society. And if it should be the pleasure of the members of the society to coöperate heartily in the work undertaken by this committee, its contributions to this humble effort to promote hygienic knowledge and sanitary improvements will eventually confer great and enduring public benefits. The committee, therefore, earnestly solicit the coöperation of members of this society and of the medical profession generally throughout the State.

The chairman of this committee being the member of the Committee on Epidemics from the First District, begs leave to report that his report of the history of the epidemics that have prevailed in his district during the past year, will be very soon completed, and forwarded to the Secretary of the society.

With the highest regard,

I have the honor to be very truly, yours,

ELISHA HARRIS.

The following preamble and resolution were offered by Dr. Geo. F. Shrady, of New York :

Whereas, In the opinion of this society, much loss of life and limb occur for want of sufficiently speedy medical assistance in cases of railroad accidents; and, whereas, the efforts of medical men when present, are often rendered nugatory for the want of suitable appliances; and, whereas, it is desirable that some better provision should be made than at present exists to meet railroad casualties; and, whereas, this society has been informed that a large and comprehensive measure is about to be introduced in the Legislature of this State, of which proper medical attendance for railroads forms an essential feature; therefore, be it

Resolved, That a committee be appointed to report at the earliest moment whether any or what action shall be taken by this society in the premises.

The Chair appointed the following gentlemen to constitute the committee: Dr. Shrady, of New York; Dr. Arnold, of Westchester; and Dr. Augustus Willard, of Chenango.

Dr. Swinburne read a paper entitled "Notes from a Post Mortem Examination in a Case of Supposed Murder." (See Art. 2.)

Dr. Squibb, from the committee, read the following report relative to the Resolutions of the Oneida County Medical Society, and the New York Academy of Medicine.

(See report, p. 433.)

On motion of Dr. Blatchford, it was resolved to accept and adopt the report. Carried unanimously.

Dr. C. A. Lee presented a resolution relative to changing section four, article one, of the Code of Ethics, adopted from the American Medical Association.

On motion of Dr. Wm. P. Townsend, the resolution was laid on the table.

Dr. James M. Minor read a paper and exhibited an instrument for the dilatation of strictures of the urethra.

Dr. J. H. Hobart Burge read a paper and exhibited an instrument for dilatation of strictures of the urethra.

Dr. Cotes presented resolutions relative to reorganizing and improving the present status of the Army Medical Department. Laid on the table.

Dr. Willard read a paper by Dr. J. R. Boulware, of Albany, entitled "Suffocation, with Pathological Specimen."

Dr. Root, of Genesee, presented the following, which was laid on the table:

Resolved, That in the opinion of this society the artificial leg invented by Dr. D. Bly, of Monroe county, for which he holds a patent, is not a surgical instrument in a sense referred to in our Code of Ethics.

The Society then adjourned to meet in the Assembly Chamber at 7½ o'clock, to hear the annual address by the President. The hour of the morning meeting being made at 9 o'clock.

EVENING SESSION.

The Society met in the Assembly Chamber, at 7½ o'clock, the Secretary, Dr. Willard, presiding, when the President, Dr. Edward H. Parker, delivered the annual address before the society.

Dr. Kendall presented the following:

Resolved, That the thanks of the society be presented to the President, Dr. Parker, for his interesting and eloquent address, and that a copy be solicited for publication in the society's Transactions. Unanimously adopted.

[Assem. No. 209.]

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The Society then adjourned, to meet at nine o'clock on Thursday morning.

THURSDAY MORNING.

The Society was called to order by the President, Dr. Edward H. Parker.

The minutes were amended and approved.

Dr. Fimell presented a communication from the New York County Medical Society.

Dr. Willard presented a communication from Dr. E. R. Peaslee, entitled "Mechanical Appliances in the treatment of Uterine Affections."

The Committee on Nominations presented their report. The report was accepted and the following officers duly elected:

President—THOMAS HUN, Albany.

Vice President—DANIEL P. BISSELL, Utica.

Secretary—SYLVESTER D. WILLARD, Albany.

Treasurer—JOHN V. P. QUACKENBUSH, Albany.

COMMITTEE ON PUBLICATION.

Drs. Thomas Hun, Sylvester D. Willard and Howard Townsend.

FOR CENSORS.

Southern District	William Govan. Joel Foster. Elisha Harris.
Eastern District	Barent P. Staats. T. W. Blatchford. Peter McNaughton.
Middle District	Jenks S. Sprague. Chas. E. Coventry. A. F. Doolittle.
Western District	Alex. Thompson. H. W. Dean. Edward Hall.

COMMITTEE OF CORRESPONDENCE.

First District	John H. Griscom.
Second District	Wm. P. Townsend.
Third District	Wm. P. Seymour.
Fourth District	Hiram Corliss.

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Fifth District.....	Hiram Adams.
	W. Taylor.
Sixth District.....	J. K. Chamberlayne.
	W. H. H. Parkhurst.
Seventh District.....	H. W. Denn.
	George Cook.
Eighth District.....	Douglas Bly.

ELECTED HONORARY MEMBERS.

Dr. T. G. Geogehan.....	Dublin, Ireland.
Ashbel Woodward.....	Connecticut.
John Jeffries.....	Boston.
Wm. Carpenter.....	London.
Henry Bronson.....	New Haven.

NOMINATED FOR HONORARY MEMBERSHIP.

R. S. Satterlee.....	U. S. Army.
Joseph Carson.....	Philadelphia.
S. W. Butler.....	Philadelphia.
Wilson Jewell.....	Philadelphia.
N. S. Davis.....	Chicago.
John M. Cayler.....	U. S. Army.
Wm. J. Sloun.....	U. S. Army.
Ralph Isham.....	Chicago.

Committee on Voluntary Communication continued from last year.

DELEGATES TO AMERICAN MEDICAL ASSOCIATION.

Dr. A. Thompson,	Dr. D. P. Bissell,
Theo. L. Mason,	E. H. Parker,
C. V. Barnett,	E. B. Squibb,
A. Crispell,	Chas. S. Wood,
H. W. Dean,	J. C. Van Hovenburg,
J. F. Jenkins,	Wm. Govan,
Thomas Hun,	Thos. C. Brinsmade,
S. O. Vanderpool,	H. Corliss,
Chas. E. Van Anden,	Sanford R. Hunt.
N. C. Husted,	Joseph C. Hutchison,
Henry S. Downs,	Henry C. Gray,
Wm. P. Seymour,	Thos. C. Blatchford,
E. R. Peaslee,	G. A. Dayton.
Joseph Beattie,	

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Arresting Hemorrhage from wounds received in Battle, with a History of the Measures heretofore resorted to for that purpose."

Dr. C. H. Porter presented a paper entitled "Arsenical poisoning."

Dr. P. Stewart presented resolutions relative to appointing a committee to collect data relative to homœopathic practice.

The resolutions were laid upon the table.

Dr. J. H. Hobart Burge read a paper entitled "A new instrument for removing foreign bodies from the trachea and œsophagus."

Dr. Hly read a paper on "the proper points for amputations."

Dr. White, of the Academy of Medicine, presented the following:

Resolved, That the thanks of the State Medical Society be accorded to its Secretary, Dr. S. D. Willard, for the laborious compilation he has made of the medical men who have entered the army from the State of New York, and that he be requested to continue the same.

Dr. Corliss presented a paper entitled "A statement of a protracted case of lameness."

Dr. Quackenbush presented a communication from the Vice President, Dr. A. Van Dyck, accompanied with a specimen of monstrosity, the illegitimate birth of a girl of fifteen years.

Dr. C. A. Lee exhibited a new tourniquet made by Dr. Lambert, which he believed an improvement on the French and American instrument.

Dr. Swinburne exhibited a case of exsection of hip joint.

Dr. Kendall, from the committee on the President's inaugural address presented their report, which was accepted and adopted, as follows:

The committee to whom was referred the introductory address of the President, beg leave to report that they have perused it as published in the papers, and that the interest elicited in its hearing has been enhanced by its perusal, on account of the valuable suggestions therein contained.

It is not the intention of your committee to review the entire address, but simply to call the attention of the members of the society to this valuable document, trusting that their ready minds will see the force and value of the suggestions therein contained, equally with the committee.

With reference to the action of the military surgeons at the battle of Bull Run, who, allowing their regiments to depart,

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"man's breath is in his nostrils"—that life, health and all their concomitant blessings are dependant upon the will of our Supreme Ruler; and that it becomes us to bow submissively to his will, and to have our work done and well done, like our deceased member, for our call, when the Master shall come.

Resolved, That in the decease of our brother, this society has lost one of its most earnest, efficient and valuable members; his patrons, one of the safest and most judicious of medical advisers; his family, the best of husbands and fathers; and the community in which he lived, a generous, noble, upright, honest man; and that his virtues, as members of different communities but of the same medical society, it becomes us to imitate.

Resolved, That this society extend an expression of its condolence to the widow and children of the deceased, and that a copy of these resolutions be sent them by the Secretary of this society.

All of which is respectfully submitted.

JAS. V. KENDALL,
D. P. BISSELL,
HOWARD TOWNSEND,

Committee.

Dr. N. C. Husted presented a paper entitled "Caries of elbow joint with excision, and recovery with useful arm."

Dr. Mason presented a communication from the Kings County Medical Society, entitled "Malignant pustule," by Dr. A. N. Bell, of Kings.

The Special Committee to whom was referred a paper presented by Dr. Daniel Holmes, of Pennsylvania, at the annual meeting of this society in 1860, on the subject of intracapsular fracture of the neck of the femur, beg leave to report, that during the entire interval between the session of 1860 and 1861 they had no assurance from Dr. Holmes that he would place the pathological specimen in their hands, for the purpose of making a full and thorough examination of it; that the Chairman, just as the society was about to adjourn *sine die*, at its last anniversary meeting, received a letter from Dr. Holmes, requesting the committee to be continued, and that in accordance with this request it was continued with the hope and expectation that it might still have an opportunity of fulfilling the design of its appointment.

The Chairman promptly notified Dr. Holmes of the action of the society, and at the same time urged upon him the necessity

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	Electd February.
Dr. *Nathaniel Chaptann, Philadelphia.....	1823
*Daniel Drake, Cincinnati.....	1824
*John D. Henry, Rochester, N. Y.	1824
*Philip S. Physick, Philadelphia.....	1825
*Joseph Gallup, Burlington, Vt.....	1825
*Joseph Lovell, Washington, D. C.	1827
*John Onderdonk, New York.....	1827
John Lizars, Edinburgh.....	1828
*Wm. Hammersly, New York.....	1828
*Samuel White, Hudson, N. Y., D. 1845. . .	1829
*J. Augustine Smith, New York.....	1829
*Eli Ives, Connecticut, D. 1861.	1830
John W. Gleninger, Lebanon, Pennsylvania ..	1830
*George McClellan, Pennsylvania.....	1831
*Eli Todd, Connecticut.....	1831
*Thomas C. James, Pennsylvania.....	1832
*Thomas W. Henry, Kings county, N. Y.	1832
Reuben D. Muesey, Ohio.....	1833
Walter Channing, Massachusetts.....	1833
James Conquest Cross, Kentucky.....	1834
*Alfred T. Magill, Virginia.....	1834
Samuel Jackson, Philadelphia, Pennsylvania ..	1835
*John Eberle, Ohio.....	1835
Robley Doughtson, Philadelphia, Pennsylvania.....	1836
*Thomas Sewall, District of Columbia.....	1836
*Luther V. Bell, Massachusetts, D. 1862 ..	1837
Charles B. Meigs, Pennsylvania.....	1837
*Daniel Oliver, New Hampshire.....	1838
*William Tully, Connecticut, D. 1859. . .	1838
Jacob Bigelow, Massachusetts.....	1839
Jonathan Knight, New Haven, Connecticut ..	1839
Placido Portal, Palermo.....	1840
George B. Wood, Philadelphia.....	1840
Hugh L. Hodge, Pennsylvania.....	1841
Benjamin W. Dudley, Lexington, Ky.	1841
Jerome V. C. Smith, Boston, Massachusetts ..	1842
Isaac Hays, Philadelphia, Pennsylvania.....	1842
*Enoch Hale, Boston, Massachusetts.....	1843
Willard Parker, New York.....	1843

* Deceased.

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Name.	County.	Year.
Dr.*John Ely		1815
*Westel Willoughby		1816
*David Hosack, D. 1835. .Et. 67..		1816
*SAMUEL L. MITCHELL, D. 1817.....	Et. 61, New York	1817
*T. ROMENS BRCK, D. 1855. .Et. 64.	Albany	1817
*JOSEPH WHITE	Orsego	1818
*Cornelius E. Depew .....	.....	1818
William Bay .....	.....	1819
*Lyman Spaulding .....	.....	1819
*Felix Pascalis, D. 1834. .Et. 70..	.....	1820
*Amos G. Hull .....	.....	1820
*Charles Drake .....	.....	1821
*Peter Wendell, D. 1819. .Et. 63..	Albany	1821
*JAN R. MANLEY, D. 1851. .Et. 69.	New York	1822
*ALEX. COVENTRY, D. 1831. .Et. 65.	Oneida	1822
*Luther Guillem, D. 1850 .....	.....	1823
*Thos. Brodhead, D. 1830. .Et. 65.	.....	1823
*JOHN H. STEELE	Saratoga	1824
*LAURENS HULL	Oneida	1824
*JONATHAN EIGHTS, D. 1848. .Et. 75.	.....	1825
*Henry Mitchell, D. 1856. .Et. 72.	.....	1825
*John Watts .....	.....	1826
*Daniel Ayres, D. 1853. .Et. 66 ..	.....	1826
Eliat T. Foote, New Haven, Ct. .	.....	1827
John C. Cheeseman, N. Y. city ..	.....	1827
Platt Williams, Alder Creek	Oneida	1828
*Richard Pennel, N. Y. city .....	.....	1828
*JOHN B. BACK, D. 1851 .....	.....	1829
*H. W. Doolittle, D. 1853. .Et. 64.	.....	1829
*Moses Hale, D. 1837. .Et. 57 .....	.....	1830
*Alpheus S. Greene .....	.....	1830
Edward G. Ludlow, N. Y. city ..	.....	1831
JAMES McNAUGHTON, Albany	Albany	1831
*JOEL A. WINE, D. 1852. .Et. 64..	Albany	1832
Joel Foster, New York city	New York	1832
*J. G. Morgan, D. 1832. .Et. 67..	.....	1833
*SAMUEL WHITE, D. 1845. .Et. 68.	Columbia	1833
WILLIAM TAYLOR, Marlboro	Onondaga	1834
*William Horton, jr		1834

* Deceased.

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Names.	County.	Year.
Edmund F. Grant.....		1847
ALDEN MARCH, Albany.....	Albany.....	1847
*THOMAS B. HICKS.....		1847
Thomas Gondsoll, Utica.....	Oneida.....	1847
Nelson Winton, Havana.....	Schuyler.....	1847
George W. Bradford, Homer.....	Cortland.....	1847
Alden S. Sprague.....	.....	1847
Richard A. Varick.....	.....	1848
Peter Van Buren, N. Y. city.....	.....	1848
Wm. S. Norton, Fort Edward.....	Washington.....	1848
JENKS S. SPRAGUE, Cooperstown.....	Otsego.....	1848
Denison R. Pearl.....	.....	1848
*J. Edwin Hawley, D. 1859.....	Et. 57.....	1848
ALEXANDER H. STEVENS.....	N. Y. city.....	1848
John M. Pruyn, Kinderhook.....	Columbia.....	1849
Morgan Snyder, Fort Plain.....	Montgomery.....	1849
Patrick H. Hard.....	.....	1849
Dyer Loomis, New Berlin.....	Chemung.....	1849
EDOS BARNES.....	.....	1849
ALONZO CLARK, New York city.....	.....	1850
Nathaniel Miller.....	.....	1850
THOMAS C. BRINSMARE, Troy.....	Rensselaer.....	1850
Hiram Corlies, Greenwich.....	Washington.....	1850
Helen F. Noyes.....	.....	1850
S. H. French, Lisle.....	Ontario.....	1850
*DANIEL T. JONES, D. 1861 Et. 60.....	Oswego.....	1850
Seth H. Pratt.....	.....	1850
Barent P. Staats, Albany.....	Albany.....	1851
Bartow Wright.....	.....	1851
Orson M. Allaben.....	.....	1851
Joseph White, Canajoharie.....	Montgomery.....	1851
Daniel P. Thomas, Utica.....	Oneida.....	1851
*SILAS WEST, D. 1859. Et. 67.....	Broome.....	1851
John E. Todd, Philadelphia, Pa.....	.....	1851
FRANK H. HAMILTON.....	.....	1851
James H. Armsby, Albany.....	Albany.....	1852
Samuel Shumway, Essex.....	Essex.....	1852
Nicol H. Dering, Utica.....	Oneida.....	1852
*ROYAL ROSE.....		1852
Jehiel Stearns, Pompey.....	Onondaga.....	1852

*Deceased.

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	Names.	County.	Year
Dr.	*John B. Conates, Butavia.....	Genesee	1855
	James L. Phelps, N. York city.....		1856
	Horace Green, New York city.....	.....	1856
	De C. Winfield, Middletown.....	Orange.....	1856
	Howard Townsend, Albany.....	Albany.....	1856
	Elbridge Simpson, Hudson.....	Columbia.....	1856
	Jacob G. Snell, Amsterdam.....	Montgomery.....	1856
	Abram Hann, Little Falls.....	Herkimer.....	1856
	Daniel P. Bissell, Utica.....	Oneida.....	1856
	Peter McNaughton, Albany.....	Albany.....	1856
	John Gay Orton, Binghamton.....	Broome.....	1856
	*Jotham Purdy, 1858. Et. 59.....	Broome.....	1856
	James V. Kendall, Clay.....	Onondaga.....	1856
	J. P. Dunlap, Onondaga.....	Onondaga.....	1856
	*Fred. F. Backus, D. 1858.....	Et. 64.....	1856
	E. W. Armstrong, Rochester.....	Mourne.....	1856
	Stephen Smith, New York.....	.....	1857
	Samuel Hart, Brooklyn.....	Kings.....	1857
	George J. Fisher, Sing Sing.....	Westchester.....	1857
	William S. Preston, Patchogue.....	Suffolk.....	1857
	*C. V. W. Burton, D. 1860. Et. 51.....	Rensselaer.....	1857
	Mason F. Cogswell, Albany.....	Albany.....	1857
	James Diefendorf, Fort Plain.....	Milwaukee.....	1857
	Abel Green, Paine's Hollow.....	Herkimer.....	1857
	Gilson A. Dayton, Mexico.....	Oswego.....	1857
	M. M. Bagg, Utica.....	Oneida.....	1857
	*Levi Farr, D. 1859. Et. 72.....	Chemung.....	1857
	J. C. Morse.....	.....	1857
	A. F. Oliver, Penn Yan.....	Yates.....	1857
	Jon. Kuecland, South Onondaga.....	Onondaga.....	1857
	Francis L. Harris.....	.....	1857
	Sanford B. Hunt, Buffalo.....	Erie.....	1857
	Ed. H. PARKER, Poughkeepsie.....	Dutchess.....	1858
	N. C. Husted, New York city.....	.....	1858
	William W. Strew, Oyster Bay.....	Queens.....	1858
	Wm. Govnn, North Haverstraw.....	Rockland.....	1858
	Sylvester D. Willard, Albany.....	Albany.....	1858
	Edward Hall, Auburn.....	Cayuga.....	1858
	Wm. Tibbits, Mechanicsville.....	Saratoga.....	1858
	Tabor B. Reynolds, Wilton.....	Saratoga.....	1858

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	Names.	County.	Year.
Dr.	John McNulty, New York city.....		1861
	C. W. Haight, Pleasantville.....	Westchester	1861
	J. Foster Jenkins, Yonkers.....	Westchester	1861
	J. V. P. Quackenbush, Albany.....	Albany	1861
	Reed B. Bontecou, Troy.....	Rensselaer	1861
	James Lee, Mechanicsville.....	Saratoga	1861
	A. E. Varney, Little Falls.....	Herkimer	1861
	Franklin Everts, Oswego.....	Oswego	1861
	Austin White, Parish.....	Oswego	1861
	Charles S. Wood, Greene.....	Chemungo	1861
	C. M. Kingman, McGrawville.....	Cortland	1861
	Nelson Nivison, Hector.....	Schoyler	1861
	Joseph N. Northrop, Albany.....	Albany	1861
	Charles C. F. Gay, Buffalo.....	Erie	1861
	Edward R. Squibb, Brooklyn.....	Kings	1861
	E. R. Pondor, New York city.....		1862
	Thomas C. Fennell, New York.....		1862
	Abraham Crispell, Rondout.....	Ulster	1862
	John D. Watkins, Liberty.....	Sullivan	1862
	S. M. Van Alstyne, Rich'd'ville.....	Schoharie	1862
	Samuel H. Freeman, Albany.....	Albany	1862
	Thos. L. Mason, Brooklyn.....	Kings	1862
	H. A. Carrington, Lausangh'gh.....	Rensselaer	1862
	J. V. Cobb, Rome.....	Oneida	1862
	A. G. Purdy, Oneida.....	Madison	1862
	P. Brooks, Binghamton.....	Broome	1862
	E. S. Lyman, Sherburne.....	Chemungo	1862
	Harvey B. Wilbur, Syracuse.....	Onondaga	1862
	Joseph Beattie, Geneva.....	Ontario	1862
	John Boardman, Buffalo.....	Erie	1862
	Charles E. Van Auden, Auburn.....	Syracuse	1862

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- 1832....Dr. George W. Phillips, Tompkins.
 Alpheus S. Greene, Jefferson.
 *Fayette Cooper, New York.
 *Thomas O. H. Croswell, Greene.
 Lucius Kellogg, Queens.
- 1833....Joshua Lee, Yates.
 Asahel Prior, Madison.
 Josiah Trowbridge, Erie.
 Benjamin J. Mowers, Clinton.
- 1834....Robert Collins, Rensselaer.
 George Eger, Orange.
 Ann Fitch, Delaware.
 *Harvey W. Doolittle, Herkimer.
- 1841....Henry B. Moore, Oneida.
 Claudius C. Cone, Seneca.
 John Merriam, Columbia.
 *Richard S. Bryan, Rensselaer.
- 1842....*Levi Farr, Chenango.
 William C. Dewitt, Ulster.
 Lester Jewett, Seneca.
 Thomas Goodsell, Oneida.
- 1844....Peter Van Olinda, Albany.
 William W. Miner, New York.
 *Matthias B. Bellows.
 Samuel Maxwell.
- 1845....Bartow White, Dutchess.
 Samuel Shumway, Essex.
 William Mason, Chenango.
 Andrew F. Oliver, Yates.
- 1846....Greene Miller, Ulster.
 *Truman B. Hicks, Warren.
 *Ithamer B. Crows, Jefferson.
 George W. Bradford, Cortland.
- 1847....Pelatiah B. Brooks, Broome county.
 Caleb Bannister.
 Hiram Corlies, Washington.
 John W. Weed, New York.
- 1848....Eliphalet Platt, Dutchess.
 Benjamin E. Bowen, Oswego.
 *Joshua Webster, Montgomery, D. 1849. Aet. 78.

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- 1860.... Dr. Francis J. D'Avignon, Clinton.
Harrison Teller, Kings.
Peter Moulton, Westchester.
1861.... Charles G. Bacon, Oswego.
Charles Barrows, Oneida.

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- 1848..... Dr. George C. Scheffer, New York.
- 1849..... William D. Purple, Chenango.
Lewis Riggs, Cortland.
Arba Blair, Oneida.
John W. Riggs, Montgomery.
- 1850..... John E. Todd, Onondaga.
James Thorn, Rensselaer.
Patrick H. Hard, Oswego.
*Nathanial Miller, Suffolk.
- 1851..... Purcell Cook, Kings.
Phineas H. Burdick, Cortland.
*Heman Norton, Oneida.
- 1852..... *Mason G. Smith, Wyoming.
Abel Huntington, Suffolk.
Erastus King, Otsego.
Abel Brace, Greene.
- 1854..... Sardius Brewster, Austinboro, Ohio.
Elias P. Metcalf, Livingston.
Jacob G. Snell, Montgomery.
*John W. Hinckley, Albany, D. 1860. Æt. 56.
- 1855..... Jonathan Kneeland, Onondaga.
James L. Phelps, New York.
A. Churchill, Otsego.
*Edson Carr, Ontario, D. 1861. Æt. 60.
- 1856..... Hiram Adams, Onondaga.
*Silas West, Broome.
Samuel J. Swalm, Kings.
Medina Preston, Sangerfield, Oneida.
- 1857..... Wm. S. Norton, Washington.
Hiram Watkins, Rensselaer.
Millen Barnett, Madison.
Daniel H. Bissell, Livingston.
- 1858..... William L. Appley, Sullivan.
William Rockwell, New York.
James Hogaboom, Rensselaer.
Nelson S. Garrison, Kings.
- 1859..... Peter P. Staats, Albany.
James M. Sturtevant, Oneida.
*Merit H. Cash, Orange, D. 1861. Æt. 59.
Richard Lanning, Tompkins.

Nominated.

1862.....

S. W. Butler, Philadelphia.

Wilson Jewell, Philadelphia.

N. S. Davis, Chicago.

John M. Cuyler, U. S. Army, Fortress Mon'e.

Ralph Isham, Chicago.

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VACANT.

February 1, 1885.

Albany.
 Oneida.
 Cayuga.
 Otsego.
 Saratoga.
 Schenectady.
 Tioga.
 Cattaraugus.
 Richmond.
 Steuben.
 Sullivan.
 Tompkins.
 Chemung.
 Rockland.
 N. Y. Medical College.
 Albany Medical College.
 Medical Department of
 University, Buffalo—17.

VACANT.

February 1, 1886.

Westchester.
 Columbia.
 Ulster.
 Madison.
 Herkimer.
 Chenango.
 Washington.
 Clinton.
 Suffolk.
 St. Lawrence.
 Cortland.
 Erie.
 Hamilton.
 Kings.
 Wayne.
 Medical Faculty of New
 York City University.
 N. Y. Acad. of Medicine.
 Bellevue Hosp. Coll.—18

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P. Brooks,	
J. G. Orton,	S. M. Hand, Windsor.
Thos. Jackson,	S. H. Harrington, Chenango Forks.
W. S. Griswold,	
E. G. Crafts,	P. M. Way, Kirkwood.
S. H. French, Lisle,	

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C. M. Purdy,	L. J. P. Wagner,
	W. H. Beardsley.

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Dr. M. M. Wood,	Dr. A. Baker.
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DELEGATES TO THE NATIONAL CONVENTION.

Dr. E. S. Lyman,	Dr. Bliss S. Sill,
	B. F. Smith.

DELEGATES TO STATE MEDICAL SOCIETY.

Dr. Andrew Baker,	Dr. M. M. Wood.
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H. K. Bellows,	M. M. Wood,
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Bliss Harris,	Wm. H. Day,
James Thompson,	John Clark,
H. H. Beecher,	M. D. Spencer,

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- Dr. Lyman Eldridge, Cincinnati.
 Jerome Angel, Union Valley.
 John Miller, Truxton.
 William Fitch, Dryden, Tompkins county.
 — Briggs, Dryden, Tompkins county.
 J. H. Knapp, Harford.
 E. C. Moe, Groton, Tompkins county.
 — Barnes, Marathon.

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| Dr. John Boardman, | Dr. George Abbott, |
| J. R. Lathrop, | John Cronyn. |

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| H. N. Loomis, | Edward Storck. |

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 George Abbott, White's Corners.
 Moses Bristol, Buffalo.
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 H. M. Congar, Buffalo.
 Walter Cary, Buffalo.
 John Cronyn, Buffalo.
 L. P. Dayton, North Buffalo.
 Charles L. Dayton, Buffalo.
 D. Devering, Buffalo.
 P. S. Dorland, East Hamburg.

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Dr. O. S. Sprague, Buffalo.
 G. Sweetland, Evans.
 Luther Spalding, Williamsville.
 W. K. Scott, Buffalo.
 James B. Sams, Buffalo.
 P. H. Strong, Buffalo.
 Edward Storck, Buffalo.
 J. F. Stevens, Buffalo.
 M. H. Shaw, Buffalo.
 Josiah Trowbridge, Buffalo.
 P. P. E. Tobie, Buffalo.
 William Van Pelt, Williamsville.
 Erastus Wallace, Aurora.
 Charles Winne, Buffalo.
 James P. White, Buffalo.
 Charles H. Wilcox, Buffalo.
 C. C. Wycoff, Buffalo.
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 J. Whitsker, Buffalo.
 Elias L. Bissell, Buffalo.
 J. E. Whitehead, Buffalo.

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 J. R. Cotes, Secretary and Treasurer.

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	Jonas S. Billings.

GREENE COUNTY.

OFFICERS.

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 Andrew Otterson, M. D., Treasurer.
 Wm Gillilan, M. D., Assistant Secretary.
 G. J. Bennett, M. D., Librarian.

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Cullen,	North,
	Chapman.

DELEGATES TO THE STATE MEDICAL SOCIETY.

Dr. Burge,	Dr. Mason,	Dr. O. H. Smith,
Hutchison,	Minor,	Brady,
	Mitchell.	

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Dr. Cullen,	Dr. Williams,
Ball,	North,
Dudley,	Brady,
Brooks,	Howard,
Mason,	Bennett,
H. S. Smith,	Squibb.

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Squibb,	Burge,
Brooks,	Brady.

SCIENTIFIC COMMITTEE.

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Hutchison,	Brady,
	Enow.

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	Squibb.

COMMITTEE ON ETHICS.

Dr. Minor.	Dr. Henry.	Dr. Crane.
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The committee on this subject of the enlargement of locks and canals refer to the report of Mr. Ogden, from the Assembly committee on canals, dated March 5, 1861, Assembly Document, No. 190, and to the report of Senator Cook, from the Senate committee, made on the 10th day of March, 1861, Senate Document, No. 100.

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James A. Hopson.	Wm. S. House.
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Dani. Lake.	Jacob C. Polhamus.
Jacob S. Wigton.	Lucius D. Isham.

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 L. B. Putnam, T. B. Reynolds.

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Dr. Morgan L. Finch, Dr. L. B. Putnam.

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E. M. Howard,

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Dr. James Ferguson.

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White, Vice President.
H. C. Gray, Corresponding Secretary.
Lambert, Recording Secretary.

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H. C. Gray.

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Dr. R. Blarvis, Dr. Chas. Allen.

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DeWitt C. McIntyre, Vice President.
S. Weed, Treasurer.
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Dr. Darwin Colvin.

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Dr. Darwin Colvin.

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mencement of the present session of the Legislature, growing out of the then recent affair of the British steamer Trent, invited the early attention of the committee to the various subjects above referred to them. This committee, finding that the committee on militia and public defence in the Assembly, with the assistance of the State Engineer-in-chief and of the Judge Advocate General, were preparing bills to provide for the public defence, for the protection of lake and sea-coast defences, and for the enrollment and thorough organization and discipline of the militia, deemed it most advisable to consult and to act in correspondence with such committee, rather than to attempt to originate and introduce into the Senate other bills for the same purpose.

The committee offer this explanation as a justification for what might otherwise appear an unwarranted indifference or delay of action on these important subjects.

When Assembly Bill, No. 119, was introduced this committee were willing that a bill containing the provisions of the first five sections of that act, with the appropriation of \$2,000,000, named in the 10th section, should be introduced and speedily passed, so as to insure the prompt supply of heavy ordnance to be mounted at the several existing fortifications within the territorial limits of this State, and such further supply of ordnance for use at exposed points within this State and for general purposes of defence, as, after a satisfactory examination, should be deemed proper and necessary, together with gun carriages, implements, ammunition, projectiles, &c., and for surveys and plans of defence and protection of the harbors and frontiers of the State.

The protracted discussion of that bill in the Assembly brought out fully the arguments in favor of the purposes of the bill, and these have been so widely disseminated that they need not be repeated here. While this discussion has been going on, the probabilities of a disagreement with the British government have been greatly diminished by the adjustment of the Trent affair, and a new era has burst upon us by the attack of the Merrimac upon the United States vessels in Hampton Roads. The Assembly, acting under the impulse in the new direction given by the trial of iron-clad boats, changed the form of Bill No. 119, for public defence, into the one entitled "An act to protect the harbor of New York against invasion and provide for the public defence."

This act appropriates \$3,500,000 for the use of, and to be reimbursed by the United States at its pleasure, with such rate of

The committee on this subject of the enlargement of locks and canals refer to the report of Mr. Ogden, from the Assembly committee on canals, dated March 5, 1861, Assembly Document, No. 130; and to the report of Senator Cook, from the Senate committee, made on the 10th day of March, 1861, Senate Document, No. 100.

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